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ERRATA.

Vol. 23, No. 3, p 201. Foley & Meslin summary, 3rd line of title, *for* " Scientific Exploration of the *cases* of Gourara and Touat," *read Oases*.

Vol. 23, No 8, p 605. Summary of Schüffner & Ruys (Weil's Disease), line 6, for Leptospira showed agglutination . . . with the patient's serum in dilution of 1:5000 (15th day), 1:2500 (24th day), 1:1000 (44th day), *read* 1:5000 (15th day), 1:25000 (24th day), 1:1000 (44th day).

Vol. 23, No 9, p 662, top line, *for* Levia *read* Leiva.

Vol. 23, No. 10, p. 737, top line. Noguchi summary (Rocky Mountain Fever) *for Dermacentor rickettsia read Dermacentroxenus rickettsi.*

Vol. 23, No. 11, p. 854. Review of Grixoni (Geographical Medicine and Hygiene in Italian Colonial Possessions): last line of first paragraph, *for* anthropods *read* arthropods.

TROPICAL DISEASES BUREAU

TROPICAL DISEASES BULLETIN.

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YAWS AND SYPHILIS: A CRITICAL REVIEW.

By Hugh S. STANNUS,
Sectional Editor, Tropical Diseases Bureau.

In consequence of the recognition of the widespread distribution of these two diseases among the native populations of tropical countries and the important part they play in causing invalidity and more serious crippling among them, yaws and syphilis have been treated in separate sections in the *Tropical Diseases Bulletin*, and the present article is an attempt to collate the information contained in the papers which have come under review during the past few years. The scope of this article is therefore limited, but it may at all events serve to show how many are the lacunae in our knowledge and how diverse the opinions held by various observers in consequence of this want of exact knowledge. For the sake of convenience of comparison both diseases will be considered together in dealing with geographical distribution, but from the clinical and pathological aspect they will be discussed separately.

GEOGRAPHICAL DISTRIBUTION. YAWS: SYPHILIS.

Nigeria.—(Pop. 19,000,000.) 1,000 cases of yaws were treated at Government hospitals in 1922, but no details are given.

For syphilis the figures are: 395 primary, 899 secondary, 41 inherited, with no mention of tertiary cases. For 1923, 278 and 1,127 cases of yaws were treated respectively as in- and out-patients, and of syphilis 201 in- and 362 out-patients for primary, 470 and 658 for secondary and 19 and 17 for inherited disease. At the same time in the disease tables a number of cases of paralysis, aneurysm, condylomata, etc., are registered, suggesting that the figures given for syphilis are unreliable. This is further borne out by the statement that while yaws is relatively uncommon venereal disease is widespread, but no special measures or antivenereal campaign have been put in force.

Gambia.—(Pop. 9,395.) In 1922 no cases of yaws returned, and while syphilis is said to be rife only 38 cases, all except 3 being primary, are shown.

(K2801) Wt P157/183 1,625 1/26 H & Sp Gp 52

Gold Coast—**Reindorf** (1922–23) at the local venereal disease clinic treated 150 cases of syphilis and 2,517 of yaws, nearly half of whom were children In 1923–24, 451 cases of syphilis were so treated, and for the whole colony 1,311 syphilis and 5,312 yaws No case of tertiary manifestations of syphilis is mentioned, the secondary cases being about twice as numerous as the primary Galyl and N.A.B were apparently being used for treatment

Sierra Leone—In 1923 144 cases of yaws, 48 cases of secondary syphilis and 494 cases of the inherited disease were treated (Galyl and N A B) A statement is made to the effect that the native is apathetic in seeking treatment and in the meantime may be spreading the disease far and wide These figures point obviously to a very unsatisfactory state of affairs

Uganda—(Pop 1 500 000) In 1922, 819 cases of yaws and 5 346 new cases of syphilis were registered, with details of the latter, as follows Primary 219 M 33 F secondary, 820 M , 457 F **Keane** estimated in 1921 that 80 per cent of population had or had had venereal disease and that 20 per cent were contagious No cases of inherited disease apart from those classed as congenital are mentioned In 1923 the total cases for syphilis is given at 11,505 , for yaws, 3,376 In this colony, wherein a campaign against syphilis was instituted some years ago, a total of 100 000 injections was given in the year, treatment being by mercury and N A B (when available), but only 17 injections of bismuth were tried **Webb** includes yaws among ' other venereal diseases " and says that all cases must be treated as syphilis whether they be syphilis or yaws, a policy which is open to grave criticism as confusing an important problem namely, the relation of the two diseases to each other and the part each takes in the production of late manifestations the question of treatment is also intimately connected with this policy since mercury is useless in yaws In the diseases tables apart from venereal diseases and yaws nearly 1 500 cases of neuralgia 26 of paralysis, 16 of optic neuritis are reported and others under the headings condylomata, aneurysm etc also 11 000 cases myalgia It would be interesting to have a more definite diagnosis in these cases , some of them are almost certainly syphilitic in nature, and in view of the observations by French workers that headaches and pains in the limbs were in a large proportion symptoms of syphilitic infection relieved by antispecific remedies it seems possible that these cases in Uganda are worthy of further investigation

Kenya Colony—(Pop 2,500,000) In the Report for 1922 figures are given by **Gilks** relating to the past 15 years During that time one to two thousand cases of syphilis were treated each year, the incidence varying greatly in different localities The figures for yaws, however, make a very different picture Up till 1919, 200–300 cases only were returned each year For 1919 and 1920 the numbers were 600 odd cases each For 1921, 7,401, and for 1922, 21,733, the last figures corresponding with the recognition of the prevalence of the disease in the Kikuyu and S Kavirondo Native Reserves, and with the beginning of measures to deal with this endemic It was estimated that 60,000 cases would have been treated in 1923 Bismuth is here almost exclusively in use for the treatment of yaws

Tanganyika Territory.—(Pop. 4,100,000.) Figures are given by DAVEY for cases treated in Government hospitals. During three consecutive years:—

	1921.	1922.	1923.
For yaws	1,109	3,123	3,593
For syphilis—			
Primary	697	569	716
Secondary	1,723	1,481	1,638
Inherited	39	74	253
Tertiary	—	21	—

The cases of yaws were found in the country bordering on Lake Tanganyika, in the S.W. Province and N.E. area. One-third of the total cases of syphilis were reported from the Bukoba and Mwanza hospitals in districts where it is estimated that 70–90 per cent. of the population is infected. 50 per cent. male and 25 per cent. female inmates of the prison at Bukoba were syphilitic. On the other hand, among 2,000–3,000 labourers recruited at Tabora less than 1 per cent. showed signs of the disease, a figure corresponding to an observation made by JOHNSTONE among the Kavirondo of Kenya. Treatment in Tanganyika Territory for these diseases is by 2 gr. doses intramuscularly at 5–7 days intervals of bismuth sodium potassium tartrate. There are also references to yaws in Tanganyika Territory by REID, and in Nyasaland by DYE (see later). Syphilis and yaws are, of course, also widely distributed over *Nyasaland, Portuguese East Africa* and *N. Rhodesia.*

Mauritius—(Pop. 377,594). There is no mention of yaws in the Report for 1923, but syphilis is stated to occur all over the island, and the proportion of 254 cases syphilis (43 primary) to the total 82,326 sick treated at hospitals and dispensaries probably in no way gives an approximation to the truth.

South Africa.—No general statistics are available with regard to either disease, but judging from a discussion by FREW and others (1924) upon the problem of syphilis as it occurs among native labourers on the Rand Mines, the disease is not uncommon and the Government has not yet instituted any antivenereal campaign among the native and coloured inhabitants. PIJPER (1921) (1924) found among 500 native and coloured people attending the Pretoria hospital without obvious signs of the disease, a positive Wassermann reaction in 57 per cent., and takes this as an index of latent syphilis among the general non-white population, or he estimates them at 8,500 in a population of 23,000. In 2½ years over 2,000 cases of the disease were treated at the same hospital.

Basutoland.—MACFARLANE (1923) refers to the prevalence of syphilis among the Basuto, but says that it is not so terribly destructive as it was 28 years ago. MCARTHUR (1923) has dealt with the subject in *Bechuanaland*, and though much interesting information is contained in his paper many of his observations are possibly invalidated by his claim that a certain condition of the scalp called "witkop," since shown to be associated with an achorion infection, was a manifestation of inherited syphilis.

Cameroons.—NOEL (1921) describes cases of yaws, while THIROUX (1922) states that the incidence of syphilis is very heavy; the infant mortality lies between 42–63 per cent , JULLEMIER ascribing syphilis as the chief cause followed by malaria and ankylostomiasis , in this he receives confirmation from ZIEMANN (1923)

On the *Ivory Coast*, BOTREAU-ROUSSEL (1924) (1925) believes that yaws is widespread in the hinterland, while THIROUX states that 50 per cent of the women in the urban centres are infected with syphilis, many children are said to show signs of the congenital disease, and still-births are estimated by LOUYS at 36–55 per cent

In *French Congo* and *Chari-Tchad* region syphilis also occurs CHAPEYROU (1922) states that a third of those treated in hospitals are affected CLAPIER (1921) saw 2 000 yaws cases in a population of 45,000 in Bas-Oubangui and 20 per cent of the children showed framboesial eruptions

PORTOIS (1924) VAN NITSEN (1920)(1924) and VAN DEN BRANDEN (1922)(1924) deal also with yaws in the Congo and MATTLET (1924) and MIGUENS (1924) in *Urundi*, where the disease is common secondary eruptions in children and tertiary yaws lesions in adults with no mention of syphilis

In *Senegal* yaws is rare according to NOGUE (1923)(1924) who only saw 4 cases in 4 years at Dakar Syphilis on the other hand, is rampant Of all patients treated at hospital practically 100 per cent are syphilitic still births constituted 17 per cent and 42 per cent of children die before the age of 4 years

In *Italian Somaliland* ANDRUZZI (1924) saw cases of both yaws and syphilis

At *Djibouti* NEAI (1924) notes syphilis and THIROUX remarks that though little is seen among the native population, 18 out of 500 European residents contracted the disease

CANTLIE (1923) deals with yaws in *Mongalla Province* in a recent paper and FUSCO (1922) in *Libya*, where the first case was observed in 1912 CASONI (1915) there collected only 10 cases of yaws in 4 years On the other hand the Arabs in this country he believes to be 100 per cent infected with syphilis

Madagascar—No figures for yaws are reported from this island but in the 16 years ending 1920 39 per cent of the total population of 3,500,000 was treated for syphilis In 1911 the percentage of syphilitic babies was 28 in 1920 43 5 ALLAIN and AUGAGNEUR (1923)(1924) state that in 1922 over 30 000 cases were treated—387 for primary, 4 342 for secondary 22 644 for tertiary, and 3 281 for congenital disease For 1923 these figures are nearly doubled all round

For *Angola* no figures have come to hand, but syphilis is undoubtedly common as NEVES (1923) refers to the antivenereal campaign which has there been started

Syphilis is known to be widespread in Morocco and throughout the countries of *N Africa* but no figures are available yaws on the contrary is unrecorded

VON DURING (1916) says of syphilis in *Turkey* that it is rare in the interior but common in Constantinople, where 60 per cent adults are affected, the infection generally being gained in childhood 100 out of 150 children at a school showed signs of the disease

CHRISTIDI (1922) stated that this disease is common in *Persia*

For *India* no statistics are to hand, but in some areas syphilis is widespread; this is true, according to LEGER (1923), of the French settlements The disease is said to be spreading in Bombay, and an antivenereal disease league has been inaugurated. POWELL (1924) has alluded to the heavy incidence—7–10 per cent— of syphilis among coolies in *Assam* The same author has recorded the introduction of yaws into Assam, there is no information as to how far it has spread, but there is an interesting paper by RAMSAY (1925) (1,000 cases), and KNOWLES (1923) has also written from that country.

Ceylon—(Pop 4,000,000) The admissions to Government hospitals for 1923 on account of syphilis are given as 4,321. During the same period about 10,000 cases of yaws were treated with salvarsan derivatives at the same institutions The total number of cases of yaws in all provinces is estimated at 150,000 No details are given, and bismuth is apparently not used

Federated Malay States—(Pop 1,324,890) In the Annual Report for 1923 it is stated that campaigns against syphilis and yaws are being actively promoted In the venereal clinics 29,675 injections of N A B were administered in the year and during the same period injections of N A B were given to 31,135 yaws patients, as against 22,972 in 1922

Siam—(Pop. 8,000,000) In the report for 1922 yaws is reported as being epidemic from time to time in certain districts, and syphilis is said to be spreading, but conditions have not so far allowed of any measures for controlling and treating this disease

China—HSU (1925) at a clinic for genito-urinary disease in Shanghai among 1 077 patients in 1923 saw 338 suffering from syphilis, all with primary chancre

THIROUX states, in referring to the incidence of syphilis in Indo-China, that it is heavier in *Cochin China* and *Annam* than in *Cambodia, Tonkin* or *Laos*, quoting KERMORGANT, who represents a third of the population of Annam as suffering from the disease MONTEL (1920) also refers to the disease as rife in Cochin-China There are also references to Annam by LEGER (1923) to *Hainan* by BERCOVITZ (1922) regarding the incidence of yaws, and to *Formosa* by OHO (1921)

Dutch East Indies—(Pop 45 000 000) WINCKEL (1923) estimates the percentage infected with yaws at from 12–90 in different areas (55 per cent of school children showing evidence of the disease). 1,000,000 persons received treatment in 4 years under the scheme there in operation SALM (1923) in Java with 8 medical officers treated 2,565 cases in 3 months VAN DRIEL (1922) referring to the incidence of syphilis states that it is common among the Chinese, but uncommon among the Bataks in Sumatra In Java it is also widespread among the Malays WAAR (1925) states that syphilis is rare, but that yaws is common in *Borneo*

New Guinea—JACKSON (1924) states that, although syphilis has been said to be common, it is in reality rare adding that no case of primary sore, inherited disease or parasyphilis was seen among 15 000 persons examined, cases of ulcer did not respond to antisyphilitic remedies The non-observation of these particular manifestations does not, however, by any means prove that syphilis may not occur

For *Samoa*, PARHAM (1922) says the incidence of yaws is high, and HURST and JOHNSTON (1923) saw 2,500 cases in 1921, but no syphilis

Smith (1923) refers to the low syphilis rate in the *Philippines*, while yaws is dealt with by Gutierrez (1923)(1923*a* & *b*) (1925) and Nicolas (1924, Maul (1918) Sellards and his colleagues (1923).

In the Annual Report for *New Hebrides* yaws is said to be widespread but syphilis was never diagnosed. There are references to yaws by Metcalfe (1924) for *Thursday Island*, where the disease is common, by McKenzie (1924) for *Cook Islands*, Barker (1925) for *Nicobar*, but no mention of syphilis.

For *British Honduras* (pop. 46,527) the only figures given in the Annual Report refer to Belize Hospital in 1923, where about 50 cases of syphilis and one or two of yaws were seen. Using a modification of Noguchi's test Clark (1924) gives the following figures for employees on the United Fruit Company's estates in North Honduras, where yaws is rare:—

		+ +	+
	No.	Per cent.	Per cent.
Negroes and mulattoes	200	26	9
Latin Americans	1,113	13·2	6·7
North American and European	104	9·6	12·5

Noc (1911) says of the *West Indies* that syphilis is more to be dreaded than malaria and yellow fever, but gives no definite figures. Dickson (1921) refers to yaws in *Grenada*, Gideon (1921) to *Jamaica* where out of a total population of 66,000, 12,000 yaws cases were treated in 3 years by N.A.B. Hanschell (1923) refers to the fact that yaws which used to be common in *Barbadoes* is now rare. Sellards, Goodpasture and de Leon (1923) have dealt with the question of yaws in *Santo Domingo* and Moss and Bigelow (1922) give an analysis of 1,046 cases. Wilson (1924) refers to 1,000 early and 4,000 late cases of yaws seen in 9 months in the Jacucal Province of *Haiti*, but it would seem possible that some of these were cases of syphilis, as this disease is stated by Levy (1923) to be very widespread.

Brazil. Gavião Gonzaga (1923) estimates the yaws incidence at 25–80 per cent. in various provinces, while Duren and Lajeune (1923) state that syphilis is very prevalent throughout town and country.

Buenaventura Burga (1920) refers to yaws in *Peru*.

In the *Panama Canal Zone* Report for 1922, the admission rate for venereal diseases for 1921 is given at 21·54 and for 1922 at 18·28.

Levy (1923) has pointed out that syphilis is rife among the negroes in *Texas*, and common, indeed, among negro populations in other States of *America*. Cases of yaws reported from countries outside tropical zones would appear to be all imported cases. Such a case is reported by Cady and Engman (1924) from *Missouri* with pathological findings, upon which the diagnosis rests, perhaps a little doubtfully. Fox (1922) reviews 51 similar cases. Alderson (1923) reported a case in *California* in a Filipino fireman who contracted the disease from a ship's cook; Stephenson (1920) a case on board a ship at Brest in a man coming from *Haiti*. Recently, Fallas and Bulow (1925) have met with a few cases in *Costa Rica* which they believe to be yaws, the first to be described from that country; from the clinical description given it is at least a little doubtful if these will prove to be cases of that disease.

YAWS.

Nomenclature.—The term Yaws has been adopted in the *Bulletin* on account of brevity and because historically it is the old name by which the disease has been known to English-speaking peoples. A monograph on this disease appeared recently under the title Parangi, and in the Ceylon Government Medical Reports the same local synonym is used—a practice which has nothing to recommend it. Up to the present time no definition other than one depending upon the essential framboesial eruption has been suggested.

Etiology.—There are but few researches to chronicle upon the *Treponema pertenue*, an organism which is, according to authorities, morphologically indistinguishable from *T. pallidum*. The results of dark ground illumination for Treponemata, their rate of disappearance under treatment and the histopathological findings in a case discovered in Missouri are given by CADY and ENGMAN (1924). Similar observations are described by KNOWLES and co-workers (1923). SELLARDS, (1923) using Levaditi's method, found the treponemas in abundance in early yaws, not only in the thickened epithelium, but in the perivascular connective tissue of the papillae. These all disappeared within 40 hours of a dose of neosalvarsan

PEARCE and BROWN (1925), carrying on a long series of experiments by intratesticular inoculations of yaws virus into rabbits on the lines of similar experiments done in relation to the virus of syphilis, have demonstrated what they consider to be a characteristic tissue reaction differentiating yaws from the latter disease, namely, peculiar granular periorchitis with little oedema of scrotum and tunica, as in pallidum infections, and slight changes only in the testicle in no way comparable with syphilitic lesions, with little or no perivascular round cell infiltration. Only transient enlargement of inguinal glands occurred, with no enlargement of the popliteal nodes so characteristic of the other disease and no other signs of generalized lesions were found, such as occur in rabbits similarly inoculated with syphilitic virus.

Yaws remains, in distinction from syphilis which is found most widespread among town dwellers, a disease of native villages in areas far removed from civilization. Lack of clothing and liability to skin abrasions are cited by most observers as important factors predisposing to infection, as also are lack of segregation of the sick and many native customs. POWELL'S observations in Assam are among the most interesting when he had the opportunity of watching the introduction of yaws into India. The first two cases arrived in Assam in 1899, and in the subsequent 10 years he saw the disease claim 653 victims among 6,000 coolies employed in an area 222 by 4 miles in extent. In each case the site of the primary lesion was noted, these corresponding in the majority of cases with some previous skin abrasion, among them, ankylostome vesicles on the feet. HENGGELER (1904) mentions leech bites in the same connexion, GUTIERREZ scabies, and others vaccination wounds. GONZAGA, in Ceara, Brazil, believes that Culicoides act as agents in transmission. HURST and JOHNSON point out that yaws becomes epidemic in American Samoa following the season when flies are most numerous owing to the rotting bread fruit. In a recent discussion AUSTEN (1923) pointed out the desirability of identifying the flies which feed on yaws sores and are believed to carry infection. The effect of climate as a factor in the etiology of the disease has been noticed in the past, and is referred to by GILKS

(1922), who states that though found at both sea level and at an altitude of 5,000 ft., the disease would appear to be more prevalent among the inhabitants of lower-lying areas. CANTLIE reports finding cases common in the mountainous regions of Mongalla, and OHO at 5,000 ft in Formosa. WINCKEL found that it was chiefly a disease of the low country in Java, but in Sumatra it is widespread on the Batak plateau at over 3,000 ft. SELLARDS, working in the Philippines, made the interesting observation that, in N. Luzon Province, at 2,500–5,000 ft., the lesions of yaws were largely limited to the regions about the mouth, anus and vulva, pointing to anatomical peculiarity or clothing as factors.

Very great interest attaches to the more recent observations by RAMSAY in Assam. He found that florid yaws was only common among the plain dwellers in the warm season ; in the cold season these people and the hill people at all seasons showed only condyloma-like lesions in the warm moist regions of the axilla, between the nates, etc., while with the return of the hot weather, or if the hill dweller came down to the hot plain, the disease again became florid. This observation may explain why yaws has been missed sometimes in what are endemic areas, it is a point of interest and illustrates the fact that in searching for disease among native populations it is necessary to know where to look and what to look for

Many observers refer to the heavy incidence in childhood ; thus SELLARDS found 69 per cent of his cases were under the age of 11 years. Generally speaking, the greater the incidence of yaws in any given population of natives, the greater is the proportion of child infections, so that in communities where 100 per cent. are infected the disease might almost be looked upon as one of the exanthemata of childhood I believe that the same may be true of syphilis in some countries.

Pathology.—CADY and ENGMAN, quoted above, and KNOWLES give some account of pathological findings, and MAUL (*vide infra*) has described the radiographic appearances in tertiary bony lesions. Other references are contained in the writings of GUERRERO and SELLARDS, but with these few exceptions there appears to have been no work recorded on the pathological side. The pathogeny and pathology of yaws are subjects deserving of reinvestigation and careful comparison with the findings in cases of syphilis among the same peoples

Symptomatology and Clinical Manifestations—Among the clinical accounts of the disease those by POWELL in Assam, on account of their precision, are particularly valuable, and what appear to be his just criticisms of much that has been written on yaws by others, including the careless use of descriptive terms, should be read by everyone interested in the subject who would preserve a critical mind towards a disease which still presents many unsolved problems. POWELL gives at the same time a good bibliography of earlier authors. He lays stress upon the following points : The initial lesions, if they be seen, and the subsequent generalized eruptions never have the form of ulcers as described in many textbooks ; glandular enlargement is not noticeable in any cases unless complicated by sepsis or recent syphilis ; prodromal furfuraceous eruptions do not occur ; fever, as a symptom, is absent in children and occurs in adults more rarely than some writers state ; affections of mucous membranes do not occur ; no tertiary lesions were observed in the 10½ years his cases were watched Hyperkeratosis, this author states, is commoner in other parts of India where there is no yaws than among his cases and he has seen persons with this condition develop primary yaws. Gangosa he believes to be a syphilitic manifestation No case of inherited transmission was seen

RAMSAY, writing recently from Assam, found " chronic dermatitis " and ' the worm-eaten appearance on the soles of the feet " common among his 1,000 cases, but " tertiary lesions " uncommon, arthritis occurred in 30 per cent, chiefly of phalanges GUTIERREZ states that 50 per cent of cases attending a yaws clinic in the Philippines had keratosis DYE (1924) only saw one case of " pitted palms ' among some hundreds of cases in N Nyasaland, though the condition is common enough elsewhere in that country SELLARDS describes clavus as common in Santo Domingo, but rare in Manila With regard to lesions of mucous membranes (never noted by POWELL and other good observers) it may be recalled that CASTELLANI states they ' are not very common, ' and adds that granulomatous nodules may develop at the base of the tongue and on the nasal mucous membrane, and more rarely in the larynx ESLER (1925), in Kenya, quotes the case of a child aged 2 years with florid secondary yaws who developed laryngeal obstruction necessitating tracheotomy, and CALLANAN has seen a single case among many thousands showing a lesion on the tongue HURST and JOHNSON, among 2,000 cases in Samoa, found less than 5 per mille with any lesions on mucosa, and in those cases the nasal mucous membrane was alone affected NOEL, writing from Cameroon asks one to believe that he saw among 97 cases of yaws 22 with the mouth 19 with the nose, and 4 with the conjunctiva affected In many of the cases reported there is a strong suspicion that it is the muco-cutaneous junction area which is involved and not the mucosa SPITTEL in his monograph on yaws in Ceylon, states that he has never seen any lesion of a mucous membrane He says too, that he has never seen alopecia, hyperkeratosis is not mentioned, but he admits the acuminate papular rash with furfuraceous desquamation the pitting on the palms and worm-eaten appearance of the soles of the feet

MOSS and BIGELOW found the primary lesion on the lower extremity below the knee in 705 out of 803 cases, and infer that trauma is an important factor, and that flies play little part The primary yaw occurred on the genitalia in only 1 per cent They believe that the soles of the feet are always the seat of granulomata, and later clavus only in a single patient was a lesion of mucous membrane noted They state that it was impossible to make a differential diagnosis from syphilis in tertiary cases, but do not state definitely whether they saw natives suffering from unquestionable syphilis PIETER (1922) criticizes and supplements these writers Fever he finds a constant symptom in the secondary stage, and states that it is influenced by quinine (!) CALLANAN (1925) in Kenya through whose hands some 12,000 cases of yaws have passed in 27 months has in a recent thesis set down many important observations Among 415 cases in which the site of the primary yaw was determined, it was on the lower extremity in 68 per cent, trunk 10 per cent nipple 8 6 per cent, upper extremity 9·1 per cent head 3 3 per cent In 25 per cent of cases in which both mother and child were affected the infection was from mother to child, and in 75 per cent from child to mother, the lesion being on the nipple The secondary eruption was commonly heralded by vague pains in the limbs and headache, glandular enlargement occurred later in the following proportion—inguinal 64 1 per cent, epitrochlear 35 2 per cent posterior cervical 8 2 per cent , synovitis of knee and elbow was not uncommon

The secondary eruption showed a predilection for moist surfaces, papular and scaly framboesides were occasionally seen, but furfuraceous desquamation was very rare

Tertiary lesions noted included gummata, periostitis and osteitis as usually described, pseudomycetoma juxta-articular nodules and goundou, of which there were but few cases are believed to be due to yaws, as well as gangosa which was very common The following table sums up his findings in percentages —

		Adult		*Children*	
		Male	*Female*	*Male*	*Female*
1	Primary	2 8	5 7	11 9	14 0
2	Secondary	8 1	5 0	10 0	11 8
	1 and 2	11 5	13 7	45 1	51 6
3	Tertiary	71 1	70 0	32 1	21 6
4	Gangosa	4 3	3 6	0 9	—
	3 and 4	2 2	2 0	—	1 0

GUTIERREZ, in Manila besides papules and nodules in the secondary stage, describes macular lesions and ichthyosis-like shins In contradistinction to POWELL SPITTEL maintains that the time has arrived for speaking authoritatively upon the occurrence of tertiary lesions in yaws and accepts all those usually described under tertiary yaws together with gangosa, juxta-articular nodules and the leucoderma described by ZIEMANN under the term ' Melung The following statements, however, by SPITTEL have no very authoritative ring about them—the italics are the reviewer s— organs such as the liver testicles and kidneys, the nervous system brain and spinal cord and the walls of the blood vessels *do not seem to be affected with anything like the same frequency as in syphilis* indeed, evidence is strong that these structures either altogether escape or are but transiently affected *it is highly probable that the nervous system is slightly touched at one stage* of Parangi The disease bears too close a resemblance to syphilis for this not to be so It is noticeable that there has always been too great a tendency to describe yaws in terms of syphilis A case is described from Kenya in which there was absorption of the phalanges so that some of the fingers were merely represented by some button-like bodies with the suggested diagnosis of Para-framboesia a suggestion and a term hardly warranted There has been no evidence of value produced in recent writings to show that the nervous system is ever affected in yaws The effect of any febrile disturbance such as malaria in causing retrogression of the secondary framboesial eruption was noted by POWELL, and is referred to by ONG KIE HONG (1924) RAMSAY has seized upon this fact to explain his finding of tertiary lesions more common among the hill people than among the plain dwellers by saying that malaria plays a part in preventing the development of the later manifestations in the latter

PARHAM believes the Samoans and Fijians, who are 100 per cent. infected with yaws, to be immune to syphilis in consequence He is incredulous of double infections and considers with HARPER (1925), that general paralysis and tabes may result from yaws and quotes BUTLER in the belief that yaws may be inherited, an attitude which to most observers must appear untenable. POWELL refers with much scepticism to the statement that there is no syphilis among the Fijians and mentions that for 26 years there were 25,000 Assamese coolies in Fiji, and he is unable to believe that they were free from syphilis. He also mentions that 30 years ago the missionaries were deploring the spread of syphilis, and states that most of the photographs of " tertiary yaws " cases from Fiji have been of Indian coolies. In a recent paper HARPER is at pains to further insist that only yaws to the exclusion of syphilis occurs among Fijians, and then goes on to state that there is evidence that yaws is a cause of miscarriage, that among the late manifestations of that disease are " sabre-tibia," gummatous ulceration of skin, nasal septum and palate, irido-cyclitis, transverse myelitis and of paraframboesia aortic aneurysm and optic atrophy are commonest, while tabes and G.P.I. also occur, statements which are not likely to meet ready acceptance in view of the fact that syphilis is rife among the Indian women to whom the Fijians have access.

MAUL, in the Philippines, by X-ray examination finds 20 per cent. of yaws cases exhibit bone and joint lesions, commonly a rarefying osteitis affecting the inner parts of the bones, sometimes the outer surfaces, later with marked deformity of bone outline, and growth may be interfered with when at joint surfaces there is pressure or liability to trauma. The condition differs from syphilis in that there is no periosteal proliferation and no thickening of the cortex of the bone. In 80 per cent. the shaft is affected, in 20 per cent. the epiphysis or articular surface, in 75 per cent. the lesions are multiple. The bones in order of frequence with which they show changes are: Tibia, tarsus, fibula, phalanges, metatarsus, radius, patella, humerus, femur, ulna Under treatment these lesions clear up if of not too long standing, but they take longer than the clinical manifestations. These observations are of great value in view of the fact that these conditions are so commonly described under the term " periostitis." SOETOMO and EICHHORN (1925) have also described bone atrophy, as shown by X-rays, as characteristic of yaws in contradistinction to syphilis. CLAPIER, on the Ubanghi river, describes osteitis of short bones—scapula, trapezium, scaphoid, of the epiphysis of long bones, tibia, humerus and ulnar, but of the diaphysis of the phalanges. EGYEDI (1925) contributes an interesting paper on framboesial lesions in joints, tendon, sheaths and bursae among natives of Nias, where yaws is common and syphilis unknown

VAN NITSEN, in the region between Lakes Tanganyika and Mweru, where syphilis is stated to be rare, examined 700 cases of yaws and found " tertiary " lesions in the majority, either appearing at the end of the secondary stage or from 10–25 years later. There were 178 cases of arthalgia, 74 arthritis, 72 ostealgia, 77 periostitis, 27 necrosis, 2 bone rarefication. 500 cases also presented ulcerative lesions. HUNT and JOHNSON state that 20 per cent. of their 2,000 cases of yaws in American Samoa, where syphilis is said to be absent, had periostitis. Snuffles they found to be common among the children in the secondary stage, and painful joints resembling those of rheumatic fever were often complained of, but relieved by potassium iodide. Parenchymatous keratitis is also recorded(!). WINCKEL presents a large array of facts in support of his belief that tertiary lesions are common He cites BRUG as recording in 1911 cases of tertiary syphilis to the number of 532 in Sumatra, and only 2 of primary and secondary disease, but states that the former *were shown to be yaws*, and goes on to say that in Sumba island **Kuyer**, in 1922, found syphilis to be practically non-existent, but 70 per cent of this population had had yaws and many suffered from *peritonitis*, arthritis and *gummata of various organs, besides* pseudo-leprosy, a statement which leaves one in wonder whether **Brug** was not after all correct **Dye**, among some hundreds of cases of yaws in Nyasaland, mentions only dactylitis as common among bony lesions **Penris** (1924) points out how commonly tertiary yaws and tertiary syphilis are confounded **Gutierrez**, at Paranaque Philippines, studied 229 cases of yaws with tertiary lesions present in a third of their number—periostitis gummata, keratosis he believes that keratosis, pitting melung juxta-articular nodules and gangosa are all framboesial **Wilson** alludes to yaws being a disease of shame in Haiti and to the consequent difficulty in getting in touch with secondary cases The commonest tertiary lesions seen resembled ulcerating tubercular syphilides, then periostitis and osteitis of the bones of the leg and gangosa—other bones attacked were clavicle scapula radius, ulna and the bones of the hands and feet while the humerus, femur ribs and vertebrae escape In the absence of other evidence there appears no proof that many of the cases were not syphilitic syphilis being, it is stated widespread

Diagnosis of yaws differential diagnosis from syphilis—Practically all observers appear to agree that there is no difficulty in making a diagnosis in a typical case of yaws in the secondary stage The framboesial lesion is without counterpart in syphilis or any other disease **Fox** and **Ochs** (1922) under the title ' Framboesiform Syphilide (?) ' have described a case which on internal evidence would appear to have been a case of yaws **Goodman** and **Traub** (1923) have also referred to a framboesiform syphilide but it is doubtful whether it would be mistaken for yaws The difficulty in diagnosis arises later, between what are considered to be tertiary manifestations of this disease and similar conditions which may be due to syphilis There are some who maintain that yaws and syphilis are one and the same disease **Bory** (1924) looks upon yaws as primitive syphilis a disease which has remained dermotropic in its manifestations under primitive conditions among native races in tropical countries but which since the era of civilization developed among Europeans into syphilis as we know it, the virus becoming neurotropic **Mullfr** (1923) appears to suggest the same idea He finds that the spironema of yaws is located in the epidermis, of syphilis in the dermis that mucosae are affected in syphilis, but spared in yaws that congenital transmission occurs in syphilis not in yaws In cold climates, instead of the virus being shed by the skin, it becomes mainly restricted to mucous membranes, and to compensate for this handicap the spironema becomes able to attack the ovum These are interesting speculations, but the fact that a syphilitic may be infected with yaws and *vice versa* is held sufficient by the majority to substantiate two disease entities

Powell holds that the history of the introduction of yaws into India, where syphilis had existed for centuries is sufficient to prove the two diseases distinct, and he gives examples of superimposed infections **Mackenzie** records recently the case of a Polynesian who developed a hard chancre with shotty inguinal glands, etc , while suffering from a recrudescence of yaws Franz **Jahnfl** and Johannes

LANGE (1925), in Munich, recently tried to infect general paralytics with yaws and syphilis with negative results, their yaws virus being active, as shown by the successful inoculation of a non-syphilitic Examination of the juices expressed from the lesions in the two diseases yields no definite conclusions, treponemata are generally more numerous in framboesial than syphilitic lesions but they cannot be distinguished morphologically the one from the other The technique for examination is mentioned by KNOWLES and his co-workers Under treatment by arsenicals the organisms are said to disappear more rapidly in yaws within 40 hours of the first injection according to SELLARDS and GOODPASTURE

Serum reactions—Wassermann and Sach-Georgi tests give no help in differential diagnosis GOODPASTURE and DE LEON obtained 100 per cent strongly positive reactions in 45 cases of florid yaws using Wassermann technique MOSS and BIGELOW found 78 positive out of 91 cases of yaws the negative results occurring in late secondary, tertiary and latent stages of the disease VAN NITSEN finds that the reaction becomes positive earlier in yaws than in syphilis, and alludes to cases with persistent positive reactions just as are seen in syphilis Other workers whose results have recently been published include VAN DEN BRANDEN and VAN HOOF PENRIS CADY and ENGMAN

Most observers will agree with NICOLAS that a detailed clinical history is of the greatest value in the diagnosis of yaws and this should be taken in conjunction with the clinical picture as recommended by SPITTEL but all will not agree with the differential diagnosis given by that author Co existing infections with syphilis and yaws present a further difficulty and while it is commonly known that yaws is often a disease of childhood in some areas affecting 100 per cent of children the fact that child infections with syphilis may also be very common is often lost sight of

Treatment—The subject of treatment may be considered from two aspects—the treatment of the individual case and treatment as it may be adopted in an anti yaws campaign when consideration has to be given to the factors imposed by local conditions number of individuals affected their age sex and distribution their mode of life customs the nature of their local government and lastly the staff transport and funds available

The treatment of the individual resolves itself into treatment by drugs With the exception of PIETER who finds mercurial inunctions useful in Dominica following the native popular remedy of Van Swieten s liquor (mercuric chloride) all other workers in this field have discarded mercury and indeed resistance to mercurial treatment is mentioned as a point in differential diagnosis by many authorities, leading one to suspect that they are syphilitic manifestations which are relieved in Dominica Following the history of the treatment of syphilis potassium iodide was until recent years the most valuable remedy either alone or in a combination such as Castellani s mixture That the dosage was not however sufficiently large probably accounts for many of the unsatisfactory results

DYE found drachm doses for adults and 20 grains for children thrice daily for 3 weeks in secondary and 8 weeks in tertiary cases yielded satisfactory results VAN NITSEN records similar experiences Since the introduction of salvarsan and its derivatives iodides have been however, little used except in tertiary cases which many of them at least may be really syphilitic The employment of antimony compounds appears hardly worthy of consideration now. Van Nitsen found tartar emetic uncertain in action, and Beurnier and Clapier do not favour its employment. Dye, Auden (1922) and Reid also report on its use. The introduction of salvarsan and its derivatives following its use in syphilis revolutionized the treatment of yaws, and all authors refer to the dramatically rapid disappearance of secondary lesions under treatment with these preparations. Neosalvarsan and N.A.B. yield the best results and galyl the worst, the last-mentioned being often followed by relapse. The reported results of treatment often leave much to be desired; the word "cure" is too often used when only a disappearance of the secondary framboesial eruption has been effected. Many cases become latent, and there is little evidence yet as to what should really constitute an average course of treatment in the various groups of cases that have to be dealt with.

Spittel recommends six weekly injections of neosalvarsan in doses of 0·6 to 0·75 gm., but states that he has seen many recurrences. Pieter has observed numerous relapses 2–4 months after a total of 4·5 gm. N.A.B. Gutierréz, on the other hand, found that 94·5 per cent. of his patients remained well 1½ months after a single ·6 gm. dose of neoarsphenamin. Clapier reports, without details, 25 per cent. cures after one and 50 per cent. cures after two injections of N.A.B. 1–1·5 cgm. per kilo body weight. Hendriks (1924) in 2 years treated 3,875 cases with 4,133 injections, and reports 85 per cent. "recoveries." Van den Branden and van Hoof find sulpharsenol equal in effect to neosalvarsan or novarsenobillon. Tournier (1922), using arsenobenzol dissolved in "serum" (normal saline) injected deep subcutaneously obtained cures in 18 per cent. after one, and in 60 per cent. after two doses. Hunt and Johnson advise 3 injections intravenously at weekly intervals of 0·9 gm. arsphenamin or the neo compound. Goonawardena (1923) recommends the use of pot. iod. after three injections of salvarsan but he says he has seen many a case relapse after 10 injections. Knowles and his colleagues use sulpharsenol and silver salvarsan, giving 1–3 injections. Dye reports no relapse in the 12 months subsequent to treatment by N.A.B.—two doses of 0·3 and 0·6 gm. at a week's interval.

In those countries in which anti-yaws campaigns have been launched it is freely admitted that an attempt is being made rather to diminish the number of actively contagious cases than to effect an absolute cure of the disease. Thus, in the Dutch East Indies, one or more rarely two treatments with salvarsan or neosalvarsan have been relied on; the same is true of Kenya, Haiti, Grenada, etc. What the ultimate result may be is uncertain. It is just possible that a vast number of cases with latent infections may be created with an increase in the number who later show tertiary manifestations. What is required at the present time is an investigation, on a large scale, carried on through a number of years, with detailed observations, as to the most efficacious forms of treatment to effect cure—these observations to be rigidly controlled by laboratory tests something after the nature of Vernes syphilimetric method (*q.v.*). Until this has been accomplished the treatment of yaws will not have been established on a sound basis.

The use of bismuth in conjunction with arsenicals in the treatment of syphilis in France and in this country has gained firm adherents. Very encouraging results have been obtained with this metal or its salts apart from salvarsan derivatives in yaws. On account of its cheapness its use has superseded that of salvarsan compounds in the campaign being conducted in Kenya Colony as described by GILKS. There and in Tanganyika Territory, as reported by DAVEY, ILES, McNAUGHTON and others, potassium sodium bismuth tartrate is being used. There still seems to be some difficulty in obtaining this compound with a constant bismuth content, which may account in part for a number of fatalities reported from the latter country. WARREN (—) has referred to this point. Other references to the use of bismuth tartrate of potassium are made by GUERRERO and FERNANDEZ (1923), DANET and BEURNIS (1924) and VAN DEN BRANDEN; of Trepol by VAN DEN BRANDEN and VAN HOOF; of bismuth salicylate by PALMER (1924); of bischloral by MATTLET; of dermatol by MIGUENS and MATTLET. All observers appear to have obtained good immediate results with bismuth salts in the treatment of yaws, but the observations made above in reference to the arsenic compounds are even more true of bismuth. It is quite possible that the best form in which to administer bismuth has not yet been discovered, and it is more than probable that the potassium sodium bismuth tartrate which is at present being so widely used in Kenya will be found not to be the most satisfactory preparation. Bisoxyl has been well reported on in this country in the treatment of syphilis, used, of course, in alternate courses with a salvarsan derivative; this and bismuth hydroxide, as suggested by LOMHOLT (1925), might prove the most satisfactory in yaws.

BEURNIER and CLAPIER (1924) report favourably on the results obtained with " 189," but it appears to possess no advantage over N.A B. The latest drug to be tried in yaws is stovarsol, or " 190," which has the enormous advantage that it is given by mouth. Its use is very favourably reported upon by BEURNIER and CLAPIER, BAERMANN (1923), LEGER (1925), TANON and JAMOT (1924). The dosage tried by ROUVROY (1925) was 0·75 gm. on the first and second days, on the third, fourth and fifth days 1·0 gm., followed by six days of 0·5 gm. All manifestations disappeared. BOUFFARD (1925) also had satisfactory results in children on the Ivory Coast. Treparsol, which has been tried in syphilis and is also given in tabloid form by mouth, might be useful in yaws.

SELLARDS, GOODPASTURE and DE LEON repeated the experimental treatment of cases with the serum of patients who had received injections of N.A.B., but obtained disappointing results in no way confirming those described by ALSTON.

FISHER (1923) recently has reported satisfactory results in 84 cases of yaws treated in the Belgian Congo with Novasurol—four intragluteal injections at 5–6 day intervals of a 10 per cent. solution using 1·2 cc. for children and 2·2 cc. for adults.

(*To be concluded.*)

YAWS AND SYPHILIS.

FALLAS (S.) & VON BULOW (T.) Le pian au Costa-Rica. [**Yaws in Costa Rica.**]—*Bull. Soc. Path. Exot.* 1925. June 10. Vol. 18. No. 6. pp. 450–453. With 1 text fig.

At the antivenereal clinic of Puntarenas the authors, during the past year, saw four patients from the south-west coastal region adjoining Panama with symptoms which they diagnosed as yaws, and from observations made by one of them some four years ago they believe the disease to be endemic in that area, and state that this is the first occasion on which the endemicity of yaws has been established, though they add that the native has distinguished the disease from syphilis under the name of "bouba." The clinical account of but a single case is given, the authors observing that the eruption differs somewhat from that usually described, they themselves apparently not being familiar with the disease as met with elsewhere.

The case mentioned is stated to have had four months previously a generalized vesicular eruption, most marked on exposed surfaces and in the neighbourhood of the natural orifices; after eight days the vesicles burst and gave forth a fetid odour. Proliferation of granulation tissue then occurred and the lesions became covered with yellow crusts which rapidly turned brown. These lesions bled easily on touch, and there was a tendency to spontaneous healing. Fresh eruptions continued to appear for a year. The patient acknowledged having had fever only during the last four months, and otherwise complained only of pain about the joints and rigidity in the lower limbs. The state of the teeth was noted to be very bad, and there was enlargement of spleen and liver. No venereal history, but the Bordet-Wassermann reaction was strongly positive. Blood examination was negative for parasites; red cells 2,196,000; white cells 11,000 with approximately normal differential count. Urine alkaline and bacilluria present. Faeces: *Necator americanus* present. Microscopical examination of scrapings from the skin lesions stained with Borrel's Blue showed only a few intracellular diplococci. The cutaneous manifestations disappeared after 2 or 3 injections of N.A.B.

[The reader of this article, which has been quoted fully above, will hesitate to subscribe to the authors' claim to have described cases of yaws in Costa Rica.]

H. S. Stannus.

HENDRIKS (J. A.) Framboesia tropica. [**Yaws.**]—*Herinneringsbundel Inst. v. Trop. Geneesk. Leiden.* 1924. pp. 46–57.

A description of the clinical symptoms of yaws as it occurs in the district of Padang Sidempuan (Residency of Tapanuli, Sumatra), especially among the Batak-population in the low-lying departments (under 200 m.) of Padang Lawas and Natal. The treatment adopted was by intravenous injections of neosalvarsan, in a 5 per cent. solution, the dose gradually decreasing from 11 to 3 cc. In 2 years, 3,875 patients were treated with 4,133 injections, and 85 per cent. made a satisfactory recovery.

N. H. Swellengrebel.

EGYEDI (Henrik) **Changes in Joints, Tendon-Sheaths and Bursae due to Framboesia.**—*Meded Dienst d Volksgezondheid in Nederl -Indie* 1925 Pt 2 pp 175–182 With 8 figs on 2 plates

Working in the island of Nias to the west of Sumatra, an island administered by the Dutch during the past 35 years only, and which has remained isolated without intercourse with surrounding peoples and in which the inhabitants observe a very strict moral code, the author believes that syphilis does not exist while on the other hand 80 per cent of the population are suffering or have suffered from yaws. In one year, among 5 000 natives treated, no cases of gonorrhoea, bubo or chancroid was seen

As tertiary manifestations of yaws the writer distinguishes lesions in the sites mentioned in the title of his paper, and believes those which develop in bursae to be the origin of juxta-articular nodules. In tendon sheaths somewhat similar nodes are formed, while in joints he believes that yaws may give rise to a proliferative synovitis or to ankylosis In all there tends to follow a secondary muscular wasting due to pain and disuse The nodes tend to caseate and to become calcified some break down and discharge their caseous contents Treatment with salvarsan was effective in causing the disappearance of the earlier affections and diminution in size and pain in those of longer standing while little result was obtained in caseated and calcified lesions

H S S

GUTIERREZ (P D) **Late or Tertiary Manifestations of Yaws.**—*Arch Dermat & Syph* 1925 Oct Vol 12 No 4 pp 465–482 With 12 text figs [50 refs]

The purpose of this paper, the author says, is "to describe the more common tertiary lesions encountered," as "little information is gained regarding the tertiary lesions of yaws from studying text-books' This latter statement is unfortunately true, on the other hand, the conditions which Gutierrez describes are all well-known to those acquainted with yaws The value of the article lies in the fact that it deals with the disease as seen in Philippine Islands, and gives a picture which can be compared with the manifestations of yaws elsewhere in the world, as opinions differ as to what are and what are not the tertiary lesions of yaws

A careful study of 229 cases at Parañaque yielded the following figures —

1	Primary	10	or	4 36	per cent
2	Secondary	90	,,	39 30	,,
3	Tertiary	24	,,	10 48	,,
	Combined				
	1 & 2	52	,,	22 70	,,
	2 & 3	39		17 03	
	1 2 & 3	14		6 11	
		229			

Incidence of Tertiary Manifestations

a	Periostitis	7	or	30 43	per cent
b	Gummas	3	,,	13 04	,
c	Keratoderma	10	,,	43 47	
	Combined				
	a & b	2		8 69	,
	a & c	1	,	4·34	,,
		23			

These figures deal with cases under treatment only and are misleading in regard to keratoderma which, it is pointed out, is a very common late manifestation in those who have had yaws In Catanduanes out of 973 cases of yaws nearly 74 per cent exhibited this condition The same is true of gangosa and juxta-articular nodes, both conditions considered to be due to yaws ; they are not included in these figures, but 20 cases of the former and 40 of the latter were collected. The tertiary lesions described are nodes and gummata of skin and bone, the diffuse osteitis of the latter and synovitis. Keratoderma is dealt with at some length with, however, some confusion in regard to nomenclature. Reference is made to Moss and BIGELOW, who " describe clavus-like thickening of the soles, which the natives of Santo Domingo call ' clavus,' because of the sensation it produces of walking on nails," in the second phrase surely according a wrong etiology to the word clavus. Again, he ascribes to CASTELLANI and CHALMERS the introduction of the word " melung " to describe the late stage of the " peculiar pitting of the hands " which occurs in yaws. As has been pointed out on a previous occasion, the word melung was used first by ZIEMANN to describe pigmentary changes in the skin of the hands and feet which he considered to be a form of localized leucoderma, and only later was it recognized as probably due to yaws and noted to be associated with keratoderma ; this being so this word would be better forgotten. The descriptions given of the conditions actually seen are for the most part excellent and the photographs perfect.

H. S. S.

i. HEERDJAN. Een bijzondere vorm van Framboesia III. [**A Peculiar Form of Tertiary Yaws.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65 No 2. pp. 202–206. With 4 figs. on 1 plate.

ii. SOETOMO (R.) & EICHHORN. Een vorm van tertiaire framboesia bij kinderen. [**A Form of Tertiary Yaws in Children.**]—*Ibid.* pp. 207–211. With 9 figs. on 4 plates.

i. Two Javanese men, 45 and 47 years of age, who suffered from yaws in childhood, showed patches of diffuse, itching hyperkeratosis in various places (hands, feet, knees). There was hyperpigmentation in the centre of the patches and depigmentation near their well-marked margins. Specific treatment (bismutho-yatren, neosalvarsan) brought about considerable improvement. The differential diagnosis had to be made from psoriasis, psoriasis luetica, dermatomycosis, eczema keratoides, traumatic and arsenical hyperkeratosis.

ii. Soetomo's patient, a Javanese boy of 8 years, suffering from tertiary framboesia, showed typical sword-shaped tibiae, which affection the author has always considered as a symptom of tertiary syphilis. [This condition has, of course, been frequently described before as a manifestation of tertiary yaws..—H S. S.] EICHHORN dealt with the X-ray differential diagnosis of framboetic and syphilitic bone lesions. He lays stress upon the bone atrophy, which is common in yaws, rare in syphilis.

W. J. Bais.

JAHNEL (Franz) & LANGE (Johannes). Ein Beitrag zu den Beziehungen zwischen Framboesie und Syphilis : die Framboesieimmunität von Paralytikern. [**The Relations between Yaws and Syphilis ; Yaws Immunity in General Paralysis.**]—*Muench. Med. Woch.* 1925. Aug. 28. Vol. 72. No. 35. pp. 1452–1453. [7 refs.]

After referring to various opinions regarding the relationship between yaws and syphilis, the authors relate their results in attempting to inoculate general paralytics with syphilis and yaws. The yaws virus was contained in a rabbit submitted to intratesticular inoculation from a child suffering from yaws in Panama. In none of their experiments did they observe a positive result, but with the yaws virus they succeeded in inoculating a non-syphilitic control man with the disease. No very definite conclusions, however, can be drawn from these few experiments.

H. S. S.

FRAGA (A.). **[Transmission of Bouba to Animals.]**—*Annaes Brasil. de Derm. e. Syph.*, Rio de Janeiro. 1925. Jan. Vol. 1. p. 32. [Summarized in *Jl. Amer. Med. Assoc.* 1925. Sept. 19. Vol. 85. No. 12. p. 934.]

Dogs, rabbits and monkeys were inoculated with *Spirochaeta pertenuis* derived from 5 human cases of yaws; one of the two monkeys and some of the rabbits developed the disease, spirochaetes being abundant in the local lesion. No generalization was noted at the time of publishing the note. [No other details given.]

H. S. S.

BELL (P.). **Yaws (Framboesia) in the Chin Hills.**—*Indian Med. Gaz.* 1925. June. Vol. 60. No. 6. pp. 259–261.

A rather disjointed account by Assistant Surgeon Bell of a number of cases of a disease which would appear to be yaws observed among the Chins near Falam.

H. S. S.

ESLER (A. R.). **Laryngeal Obstruction in Yaws.** [Correspondence.]—*Kenya Med. Jl.* 1925. June. Vol. 2. No. 3. p. 90.

Dr. Esler mentions the case of another child with a yaws eruption having signs of laryngeal obstruction [see this *Bulletin*, Vol. 22, p. 549]. The child, however, disappeared without further investigation or treatment.

H. S. S.

PEARCE (Louise) & BROWN (Wade H.). **Distinctive Characteristics of Infections produced by *Treponema pertenue* in the Rabbit.**—*Jl. Experim. Med.* 1925. May 1. Vol. 41. No. 5. pp. 673–690. With 1 plate. [7 refs.]

After referring to the general consensus of opinion that while no absolute differentiation can be made upon morphological grounds between *Treponema pertenue* and *Treponema pallidum*, clinicians are practically unanimous in the view that yaws is not an attenuated or otherwise peculiar type of syphilis, but a separate clinical entity with a distinct symptom complex, the authors allude to the work of other investigators and point out that infection of experimental animals with the former organism has yielded little information to clarify the situation, since it has been thought that the lesions so closely resembled those which might be produced by *Treponema pallidum*.

The authors, during 4 years, have studied the lesions produced by intra-testicular injections of saline emulsions in rabbits only, containing two strains of *Treponema pertenue* obtained (1) from a rabbit inoculated in the testicles with material from the first rabbit passage from a black child of Panama suffering from typical yaws, (2) directly from a West Indian negress; this strain has been carried for 21 generations.

The results of these investigations go to show that the changes in the testicle are minimal, but that a characteristic periorchitis occurs consisting in the formation of small granulations about the third week No oedema of scrotum and tunica occurred like that seen in *pallidum* infections Microscopic changes are only referred to in a note, but it is therein stated that the changes in the testicle are chiefly interstitial, consisting of a round-celled infiltration with slight oedema the walls of the blood vessels of the tunica and testicle somewhat thickened but in no way comparable to that in syphilitic infections and with but little or no perivascular round cell infiltration

Regarding metastases the authors state that it is not unlikely that the organisms find their way to the opposite testicle producing minor transient changes there Some transient enlargement of inguinal glands was also noticed about 10th–14th day, in other cases no swelling was ever detected The changes in the popliteal nodes characteristic of *pallidum* infections were not seen No other signs of generalized lesions were found in rabbits inoculated by this method as in syphilitic infections when followed for many months and in several cases over a year The manifestations of *pertenue* infections are, therefore essentially local and of a relatively mild or benign character in comparison with *pallidum* infections The characteristic reaction is a granular periorchitis

H S S

BOUFFARD (G) Note sur le traitement du pian par le stovarsol [**Stovarsol Treatment of Yaws.**]—*Bull Soc Path Exot* 1925 May 13 Vol 18 No 5 pp 437–439

Called upon to treat a number of children mostly aged between 2–5 years suffering from yaws upon whom it is difficult to practise intravenous medication the author decided to make a trial of stovarsol Two tablets of 0 25 gm were given on each of two successive days, or in a few more extensive cases three tablets each day each crushed up and suspended in water taken by the mouth Lesions had disappeared on the 10th day and these cases are spoken of as cures, 75 cases in all were thus treated at Agboville in the forest region of the Ivory Coast He saw no case of goundou and, in consequence does not believe that that condition is a manifestation of yaws, otherwise would he have seen some cases among the population, who all suffer from yaws in childhood

H S S

ROUVROY Action du stovarsol sur le pian [**Action of Stovarsol in Yaws.**]—*Rev Med et Hyg Trop* 1925 May–June Vol 17. No 3 pp 146–147

A report on two cases of secondary yaws, one an adult, the other an infant treated with stovarsol In the first case 0 75 gm was given on the 1st day, 1 gm on the 3rd to 6th days, when all lesions had dried up and 0 5 gm on 7th to 13th days, when apparent cure was effected, but the Wassermann reaction remained positive The infant of 18 months was given 0 25 gm each day for a week, when diarrhoea set in This rapidly subsided after castor oil and suspension of treatment A week later on three successive days the dose of 0 25 gm was repeated and apparent cure effected No Wassermann test

H S S

FISCHER (W) Die Behandlung der Framboesie mit Novasurol. **[Novasurol Treatment of Yaws.]**—*Arch. f. Schiffs- u. Trop -Hyg.* 1925 July 1. Vol 29. No. 7. pp 339–342.

A trial was made with this drug in the case of 84 natives in the Belgian Congo suffering from yaws, cases being under observation for 3 or 4 months Four intragluteal injections were given at 5–6 days interval, using a 10 per cent solution—1·2 cc for children and 2·2 cc. for adults Results were universally good, and the author recommends this form of treatment on account of ease of administration and because the drug is cheaper than N A B H S S.

VAN DIJKE (M J), BAKKER (C) & HOESEN (H W) **Contribution to the Knowledge of Rhino-pharyngitis Mutilans.**—*Meded Dienst d Volksgezondheid in Nederl -Indie* 1925 Pt 2 pp 148–171. With 20 figs on 5 plates [32 refs]

Their attention being attracted to the question of gangosa—a disease hitherto only admitted conjecturally into the nosology of Java—by a case of total destruction of the nose in a patient casually coming to be treated for malaria, the authors set themselves to collect and investigate local cases of mutilant rhinopharyngitis As so often happens, the obscure and ambiguous rarity turned out to be a common thing, a plenitude of cases came to light in Java, and from a study of these cases and concurrent critical study of a series of cases of yaws the authors add support to the opinion that gangosa is a tertiary manifestation of yaws

The authors have recorded the results of their survey with admirable acumen, the record, though long, is not prolix, and should be read in full Of their first 8 cases of destructive rhinopharyngitis, approached with an open mind, none had a history of syphilis, 4 had undoubted evidence of yaws, 7 (all that were tested) gave a positive W R, all who stayed for treatment reacted quickly and well to salvarsan, and only 1 revealed an organism having any resemblance to *Cryptococcus mutilans* Of their next 13 cases of destructive rhinopharyngitis, approached upon a hypothesis, none had a history of syphilis, 11 had a history of yaws, 8 (all that were tested) gave a positive W R, and those who were treated reacted quickly to salvarsan, moreover, 4 had periostitis of the tibia Last, of 22 cases of yaws, jointly studied, 3 had obvious lesions of gangosa, 6 had slight ulcerations on or in the nose, and 13 had yaws papules on or in the nose, moreover, in 12 there was periostitis

Finally, the authors discuss all the various conjectural causes of gangosa, emphasize the arguments from the incidence of the disease, racial and geographical, and, finally, state their conclusions, that "Rhinopharyngitis occurs in Java Can be cured by mercury and salvarsan Is a tertiary affection of yaws" [See also this *Bulletin*, Vol 20, p 608] A Alcock

WAAR (C A H) **Rhino-pharyngitis mutilans (Gangosa).**—*Nederl. Tijdschr v Geneesk* 1925 Mar 21 69th Year 1st Half. No 12 pp 1301-1313 With 1 plate & 6 figs [15 refs]

The author records a case of gangosa in a Dyak woman at Sintang in Borneo The process apparently commenced with ulceration of the palate, later destroying the walls of the nasal passages and involving the supranasal and infra-orbital regions.

Tuberculosis, leishmaniasis and leprosy were excluded. Treponemata were not found, but the condition was considered to be tertiary yaws, as the woman had suffered from yaws previously, this disease being very common among the Dyak population, while syphilis is very rare. Treatment with neosalvarsan, mercury ointment and sol. Ricordi resulted in an arrest of the process without improvement in the appearance The final condition is described.

H. S. Stannus.

GUTIERREZ (Perpetuo D) Nodosités Juxta-Articulaires. · [**Juxta-Articular Nodules.**]—*Arch. Dermat. & Syph.* 1925. Aug. Vol. 12. No 2. pp. 159–170. With 4 text figs. [35 refs.]

In Manila, where the author studied 20 cases, the order of frequency as regards the site of the lesions was found to be: external malleolus, olecranon, knees, trochanter Sixteen out of the 20 cases gave a positive Wassermann reaction In the majority a history of yaws 5–10 years previously was obtained and syphilis ruled out. Three nodules were submitted to section and microscopical examination, but no mention of search for or finding of spirochaetes is made. The histological picture from the periphery inwards showed a surrounding loose connective tissue with masses of perivascular round cells with uniform dark-staining nuclei, inside this roughly concentrically arranged dense fibrous tissue was seen, in some places so dense that it had a smooth almost hyaline appearance with dark-staining elongated nuclei scattered between the bundles. Here and there were some accumulations of round cells, perivascular in site in some sections: inside this, again, was an area of looser connective tissue. In one node this tissue is described as consisting of collagen fibrils with elongated nuclei and many epithelioid nuclei, and also showing many round cell accumulations round the blood vessels In another node the looser fibrous tissue merged into an area staining bright red, consisting of hyaline masses and in places showing a retiform structure with clear meshes of varying sizes and shapes but no definite cellular structure, nor could leucocytes be made out in this eosinophilic mass.

Gutierrez gives an excellent review of the literature up to 1923, tracing the various opinions which have been held as to etiology, he himself believing that the nodules are late manifestations of yaws, and calls attention to the fact, apparently unknown to many writers, that it is necessary to separate clearly from the condition known as juxta-articular nodules the "subcutaneous fibroid syphilomas" described by WEBER, a rare manifestation of syphilis closely resembling that condition as first pointed out by GOODMAN and YOUNG, who state that were it not for the histological picture it would be difficult to differentiate the two conditions which, moreover, both respond to treatment by salvarsan derivatives.

H. S. S.

DUBOIS & MONCAREY. A propos de nodosités juxta-articulaires. [**Juxta-Articular Nodules.**]—*Bruxelles-Méd.* 1925. Oct. 4. Vol. 5. No. 49. pp. 1453–1455. [4 refs.]

Two independent notes by observers in the Belgian Congo. Dubois points out that there appears to be some danger at the present time of including under the term juxta-articular nodules more than a single pathological entity and demands that a more careful differential diagnosis be made in order to distinguish this condition as defined by JEANSELME from somewhat similar lesions produced by syphilis and Oncocerca infections He found J A.N. common in the middle Congo, but rare in Uélé and in Kasaï In Mayumbe, among 3,000 individuals examined, 1–2 per cent showed this affection, and he points out that here yaws is very widespread, that gangosa and other bony lesions of framboesial origin are common and goundou occurs, but more rarely He believes in a framboesial etiology for J.A N, and referring to the European case of BRODEN and BERNARD (this *Bulletin*, Vol 22, p 799), says, it would seem most unlikely that a European could have had yaws without knowing it, and appears to suggest that this case was due to some other cause and was, in fact, not a case of J A N

Moncarey states that the condition is so common among the native inhabitants of Aruwimi south of the Congo, that little attention is paid to it Removal of nodules was practised on 18 subjects, including 1 European—a Portuguese In this case multiple, symmetrical, mobile nodes occurred at the elbows ulnar crests and heads of fibulae Excision of the nodes at the elbows was followed by the rapid appearance of others the size of haricots in the same situation within a month There was a doubtful syphilitic history, but no Wassermann reaction was done Among the native cases, 13 were men 4 women In 14 the ulnar margin was affected (in 10 bilaterally) ulnar and head of fibula in 1 case, knees, elbow and ribs in 1 case sacrococcyx in 1 case 14 had microfilariae in their blood, one was syphilitic one showed tertiary framboesial bone lesions [No mention is made of antecedent history of yaws] Sections from excised nodules showed the pathological picture of chronic inflammation In 2 sections microfilariae were seen imprisoned between fibrils of fibrous tissue The author refers to the widely divergent views held as to etiology and puts forward the hypothesis that repeated trauma is an important factor, and that in the injured tissue it may be at one time a microfilaria at another a spirochaete, or other organism, which finds a nest and plays a part in setting up the chronic inflammatory reaction

H S S

SOBERNHEIM Spirochatenbefunde bei den sogen Malayenfibromen (Demonstration) [**Discovery of Spirochaetes in Juxta-Articular Nodules.**] —*Cent f Bakt* 1 Abt Orig 1924 Oct 20 Vol 93 No 1 4 pp 260–261

A short note recording the demonstration of spirochaetes of pallida type by the silver impregnation method of LEVADITI in sections prepared from a case of juxta-articular nodules

H S S

LEGER (Marcel) La syphilis dans les colonies françaises Les avantages de la méthode syphilimétrique Vernes dans la lutte contre l'endémie [**Syphilis in French Colonies. Value of Vernes' Syphilimetric Tests in its Control.**]—*Rev Méd et Hyg Trop.* 1925 May–June Vol 17 No 3. pp 116–130 [27 refs]

The first part of this paper is devoted to a review of what is known of the incidence of syphilis in the French colonies, with references to

the publications whence information has been gathered. They are placed in the order in which the disease is most prevalent, as follows: Indochina, Antilles, Indian Settlements, Madagascar, West Africa, New Caledonia, and references are made to the devastating effects of this scourge upon birthrate, etc. The point is also made that, contrary to the belief of LE DANTEC, syphilis of native races, when communicated to Europeans, may give rise to so-called parasyphilitic affections.

The second part of the paper deals with the necessity of accurate diagnosis and adequate treatment controlled by laboratory examinations, pointing out on the one hand that 10 per cent. of cases of syphilis in France are ignorant of their affection, the number being much greater among native races, and on the other hand the efficacy of treatment. Determination of cure should be estimated by a continuous method such as the syphilimetric method adopted by VERNES, who plots a curve for his flocculation tests carried out at regular intervals. The method of carrying out these tests is given, and mention made of the photometer employed in making readings.

H. S. S.

NOGUE (M.) & LHUERRE (H.). Un cas de syphilis indigène. [**Case of Syphilis in a Native.**]—*Bull. Soc. Path. Exot.* 1925. May 13. Vol. 18. No. 5. pp. 431–433. With 1 text fig.

This case of a Toucouleur, aged 26, was shown to the French West African Medico-Chirurgical Society.

The patient presented the following lesions—The left eye was destroyed and the eyelids adherent. The right eye was the seat of a marked kerato-conjunctivitis with distortion of the lids The nose and upper lip presented a condition resembling that often described under the term gangosa, while crusted ulcerating lesions were found over the frontal regions and part of the face There were also arthritis of the right knee joint and an area of osteo-periostitis in the middle part of the left tibia. The condition was said to have commenced at 13 years of age, and any knowledge of a primary chancre was denied The diagnosis was hereditary syphilis and the patient stated that his mother and brothers were also affected with this disease Under treatment with N.A B. and potassium iodide in big doses the open lesions began to heal and others to show signs of resolution.

[Such is the description of a case which must be familiar to practitioners in many parts of the tropics. This case was undoubtedly one of syphilis, though some have been thought to be due to yaws. It would be interesting to have more definite information whether such a case is one of hereditary disease or whether it be one of infection during childhood, the primary lesion being extragenital and unremarked.]

H. S. S.

PFISTER (Maximilian O.). **Syphilis: Central Nervous System and Antisyphilitic Treatment.**—*China Med. Jl.* 1925. Aug. Vol. 39. No 8. pp. 688–700. [26 refs.]

The author seeks an explanation for "the increasing frequency of syphilitic manifestations of the central nervous system," and believes that "the modern treatment of syphilis has a great deal to do with these changes." In support of the first statement he refers to the history of the early recorded cases of general paralysis in Europe and to the absence of the disease at the present day in countries where there has been little contact with " western " (European) civilization though syphilis be common, while in countries with growing contact the incidence of neuro-syphilis has been observed to increase *pari passu*. The pathogeny of syphilis of the nervous system is discussed, also the theory of there being a neurotropic virus. His own observations in China, the author holds, support the second part of his thesis. Records of 238 cases of nervous system syphilis were made, including 59 cases of meningitis, 16 meningo-myelitis, 24 transverse myelitis, 11 spastic paralysis, 24 vascular form, 7 neuritis, 34 other forms, 50 tabes and 13 G P I. All these had, he believes, received previous treatment which had, it is considered, in many precipitated the nervous lesion. The author " has never seen a single case of acute syphilitic meningitis which had not previously received salvarsan treatment," and states also as one of his conclusions that the development of metasyphilis cannot be prevented by even a most energetic treatment with mercury and salvarsan. [Thus Dr. Pfister would lead one to believe that all salvarsan treatment of syphilis is bad, but one gathers that he refers to the treatment as carried out to-day in China, and his paper is written really to arouse the interest of practitioners in China. Incomplete and irregular treatment has long been known to be dangerous, but whether or not such treatment is directly provocative of nervous lesions is uncertain Some of the author's statements appear rather contradictory, and some of his postulates open to doubt.]

H. S. S.

TSANG (M L) **The Importance of Venereal Clinics, with a Report of 400 Cases from the St. Luke's Genitourinary Clinic, Shanghai.**—*Nat Med Jl China* 1925 June Vol 11. No. 3. pp. 172–187 [6 refs]

The author is of opinion that legislative measures in an antivenereal campaign would yield no result, that little can be hoped for from education among a population of whom 90 per cent are illiterate, and that, therefore, treatment affords the best chance of diminishing the incidence of this scourge which affects possibly a third of the population. Among the 400 cases presenting themselves for treatment there were 132 cases of syphilis, of which 106 were primary the secondary cases call for no special mention , 16 tertiary cases all showed breaking down gummata presumably of skin [Obviously, where there is such a large proportion of early cases, the clinic is doing a most useful work.]

H. S S.

DE VRIEZE (T J.). Loopende behandeling van geslachtszieke militairen. [**Ambulatory Treatment of Soldiers suffering from Venereal Diseases.**]—*Geneesk Tijdschr. v. Nederl -Indie* 1925. Vol. 65. No 2 pp. 254–258.

In the past all cases of venereal disease in the Dutch East Indian army have been hospitalized for treatment De Vrieze introduced a system whereby all cases of syphilis, so long as they had no open lesions, and all cases of gonorrhoea were treated at an out-patient clinic, and remarks no increase in the number of complicated cases. Apart from the advantages in morale among the men there was a considerable saving in expenditure

W. J. Bais.

Baermann (G) Die Verwendung von gebrauchsfertig gelostem Salvarsan (Sulfoxylsalvarsan) in den Tropen **[The Use of a Ready Prepared Salvarsan Solution (Sulfoxylsalvarsan) in the Tropics.]**—*Arch f Schiffs- u Trop -Hyg* 1925 Feb Vol 29 No 2 pp 72–91

Sulfoxylsalvarsan is put up in solution, ready for use The author describes his experience in using it in the treatment of yaws and syphilis, compared with results of treatment with neosalvarsan, neosilbersalvarsan, and silbersalvarsan

Syphilis —95 cases treated with sulfoxylsalvarsan , 153 cases with silbersalvarsan and 82 cases with neosilbersalvarsan

Yaws —178 cases treated with sulfoxylsalvarsan , 150 with silbersalvarsan 65 with neosilbersalvarsan , and 1,046 with neosalvarsan

In each type group of these diseases sulfoxylsalvarsan gave better results clinical and serological (Wassermann reaction) than did the others

[Arsenobenzol preparations are costly, not easy to use, and not without danger to the patient They are still necessary in syphilis For yaws we have the equally effective very cheap, safe, almost foolproof bismuth

H M Hanschell

Le Roy des Barres Note sur le traitement de la syphilis par le treparsol **[Treparsol Treatment of Syphilis.]**—*Bull Soc Méd - Chirurg Indochine* 1924 Apr Vol 2 No 4 pp 65–67

Three cases of secondary syphilis were treated with this drug—formyl meta amino-para oxyphenylarsenic acid—in tablet form by mouth 1 gm per diem for from 4–8 weeks, with intervals caused disappearance of symptoms and rendered the Bauer reaction negative

H S S

Sei (S) & **Weise** (W) Studien ueber den Wirkungsmechanismus der Luestherapie mittels Wismut bei intravenoser Darreichung **[Syphilis Therapy by Intravenous Bismuth. Its Mode of Action.]**—*Arch f Schiffs- u Trop -Hyg* 1925 Oct 15 Vol 29 No 10 pp 554–559 [7 refs]

Using rabbits, the authors injected into the large veins of the ear measured quantities of sodium tri-bismuthyl tartrate in watery solution according to body weight After varying periods of time had elapsed these animals were bled under urethan narcosis from the jugular vein, and the bismuth content of the blood was estimated by a method given in detail estimations in some animals were also made in regard to the bismuth content of the various organs of the body The results showed that the drug disappears rapidly from the peripheral circulation Rapid excretion by the kidney and bowel occurs , at the same time rapid distribution to all the organs of the body was found including the kidney and bowel, but while the neuro-muscular system retained little, the proportion in the spleen was remarkable The authors appear to believe, that the spirochaeticidal action is a direct one by the small amount of bismuth circulating in the blood

H S S

FRASER (A Reith). "**Witkop.**" [Correspondence]—*Med. Jl. S. Africa* 1925 Apr Vol 20. No. 9 p 282

The late Dr McARTHUR's papers on syphilis among the natives of Bechuanaland, in which he described the condition called locally "witkop" as a manifestation of syphilis, were reviewed in this *Bulletin*, Vol 21 p 399 Drs MITCHELL and ROBERTSON, on the other hand, finding a fungus of the favus group in a small number of cases they examined believe the condition to be due to this infection [*l c* Vol 22, p 793 This has stimulated Dr Fraser to defend Dr McARTHUR's original beliefs The point at issue is whether *witkop* is the result of a syphilide affecting the scalp and the fungus affection secondary, casual, and not universally present, or whether the condition is specifically due to the fungus which is present in every case, many of whom are by chance syphilitics The point is an interesting one and should be capable of solution

H S S

EARLY (P V) **The Flocculation Test for Syphilis, in Small Clinics.**—*China Med Jl* 1925 Feb Vol 39 No 2 pp 140–145 [3 refs]

After reviewing briefly the comparative merits of the Wassermann and various flocculation reactions the author states the purpose of his paper is to emphasize the fact that the F R provides a test for syphilis of real diagnostic value which does not demand specialist training or elaborate equipment His experience is based on 160 tests, including 9 on C S F The Wassermann reaction was not employed as control The paper discloses that where the clinical diagnosis was reasonably certain then the F R could be cited as one other piece of evidence in support of the diagnosis [The reviewer would point out that these serum tests are indispensable for diagnosis only in the absence of clinical data and also for the control of treatment In these purposes the F R cannot yet replace the Wassermann reaction, though it may ultimately, when the F R has been further studied, do so One hopes for this consummation At present a diagnosis based mainly on the result of the F R is more likely to be in error than one based on the W R result for all the F R tend to give a higher percentage of false positives]

H M Hanschell

WEBB (W Leslie) **A Simple Modification of the Flocculation Method of Serum Diagnosis in Syphilis suitable for Use in isolated Tropical Treatment Centres.**—*Trans Roy Soc Trop Med & Hyg* 1925 Feb 19 Vol 18 No 8 pp 432–438

This is an important paper, and timely , for the tackling of venereal disease in the African population of the empire is receiving serious consideration by governments In Uganda syphilis constitutes one of the most important medical problems The Wassermann test can be carried out only within a limited area surrounding the central Venereal Disease Laboratory at Mulago If the treatment of every case of yaws and syphilis were controlled by serum tests treatment would not be abandoned until the serum reaction had been influenced In 1923–1924, at Mulago 16,000 serums were tested, both by Wassermann and by one other Sachs Georgi reaction The latter was found to be very distinctly inferior to the former

The flocculation test now described by the author is claimed to be simple enough to be performed at any 'out centre,' and by a native after a few weeks training and its results are in closer agreement with results of Wassermann test than those of any other flocculation test hitherto tried at Mulago The author gives a list of the simple apparatus required, and the technique of preparing from sheep's heart a cholesterinized extract (which can be produced in bulk for distribution from a central laboratory)

Method of test—1 cc of 1 in 11 emulsion of cholesterinized heart extract in 0 9 per cent saline is added to 0 2 cc of fresh, *active* patient's serum and the mixture left at room temperature for 24 hours Serums mixed with blood cells or clot are not suitable for testing by this method Absolute sterility of receptacles is not, but "quite clean" is, necessary In preparing the antigen-extract mixture which is the critical part of the test the aim is to obtain as turbid a mixture as possible How to ensure this is described carefully Flocculation of any degree is easily distinguished by the naked eye In discussing the result of comparison between the Wassermann and the above flocculation reaction the author makes the very interesting statement that in Uganda syphilis far more so than in Europe, appears to be a self-curing disease and many natives who *undoubtedly* [reviewer s italics] have had syphilis and received no effective treatment for the disease show no active signs and consistently give negative results to the Wassermann test

(1) Of the 650 serums tested 527 (81 per cent) gave results identical with Wassermann, according to an arbitrary use of symbols to denote degrees of flocculation

(2) 578 serums (89 per cent) agreed with Wassermann, or differed from it by one degree only

(3) 626 serums (96 per cent) agreed with Wassermann, or differed from it by 2 degrees

(4) All known negative controls from European staff were negative to both tests throughout

(5) The serums in which flocculation test was negative whilst Wassermann was positive, were in those cases where clinical details were obtained, either from cases which appeared to be non-syphilitic or from known cases of syphilis without active signs who had had treatment

(6) Of 131 serums negative to Wassermann only 3 showed definite flocculation clinical details are unknown in two of them in the third there appeared to be some excuse for flocculation

(7) Nearly all results are clear cut Out of 650 serums the reaction was doubtful in 3 only

The author claims that results of this flocculation test compare very favourably with results of the Wassermann test Great confidence may be placed in a positive flocculation reaction, and furthermore, where intensive antisyphilitic work is being carried out under conditions such as exist in Uganda, which require that a large amount of the diagnosis and treatment must be carried out by native assistants at up-country medical subcentres, the application of this test by these native assistants would greatly increase the effectiveness of the campaign undertaken by them

H M H

LLOYD (R B) **Serum Reactions in Syphilis.**—*Indian Med. Gaz.* 1925 Jan Vol 60 No 1 pp 19–24 [36 refs]

The author sums up a very interesting and careful review of this important subject, as follows —

" (1) While there are material differences amongst some of the leading workers regarding the value of the flocculation tests, there is a general consensus of opinion that the Wassermann reaction remains for the present the best test for the detection of syphilis though one or more of the flocculation tests may be done in addition

(2) The great advantage of the Wassermann test is its high degree of sensitiveness combined with an almost total absence of false positives

(3) While the earlier flocculation tests have not proved as satisfactory as was expected, the more recent developments are much more promising Improvements in technique may very possibly enhance the value of the Sachs Georgi test The Kahn test is simple and apparently very serviceable The former of these tests is however not quantitative The Dreyer Ward test is valuable and quantitative and the technique should admit of simplification

(4) It is probable that some form of flocculation test will eventually attain to extended use although the difficulty in reading intermediate grades of positive reaction is at present considerable

' (5) The occurrence of non specific reactions in flocculation tests needs further examination

" (6) Before any particular flocculation reaction can be accepted as the standard test it must be clearly shown to be capable of yielding satisfactory results with cerebro spinal fluid, since this is the direction in which syphilis therapy is concentrating

H M H

HEINEMANN (H) Weiterer Beitrag zur Frage der Bedeutung der serologischen Blutuntersuchung in tropischen Landern [**Value of Serological Blood Examinations in the Tropics.**]—*Arch f Schiffs- u Trop-Hyg* 1925 Apr 1 Vol 29 No 4 pp. 179–183 [10 refs]

Comparison of results of the Wassermann reaction (2 extracts) and Meinicke s Trubungsreaktion (2 methods) in a comparatively small number of cases of syphilis, yaws, malaria, leprosy, and other illnesses gave, on the whole, most trustworthy results for the Wassermann reactions

H. M. H.

SCHIJVESCHUURDER (W) Over de Goudreactie van Lange. [**Lange's Goldsol Reaction.**]—*Geneesk Tijdschr v Nederl Indie* 1925 Vol 65 No 2 pp 150–156 [11 refs]

Schijveschuurder quotes Cambronero and Palance's method for the preparation of a sensitive and stable colloidal gold solution and describes briefly four cases of cerebrospinal syphilis in which the goldsol reaction was of decisive diagnostic importance In countries where the value of the Wassermann test is diminished by the endemic occurrence of yaws Lange's reaction may become of some importance in differential diagnosis

W J Bais.

AMOEBIASIS AND DYSENTERY.

AMOEBIASIS.

BATES (J. E.). **Amoebic Dysentery in Canada.**—*Canadian Med. Assoc. Jl.* 1925. Oct. Vol. 15. No. 10. pp. 1012–1016. [28 refs.]

It having been stated that amoebic dysentery in Canada is rare, the author's object is to report a case in a woman who had never been out of Canada, and to draw attention to the fact that infection with amoebae is not a rare condition in subtropical and temperate zones. The case is described and, from a critical survey of the literature, the author concludes that it is the third to be reported as having originated in Canada ; although it is also his opinion that with careful examination of the stools of cases of mucous colitis, amoebae would be encountered in as high a proportion of cases in Canada as in England or the United States.

H. M. Hanschell.

KESSEL (J. F.) & WILLNER (Otto). **Some Clinical and Laboratory Aspects of Amoebiasis with a Preliminary Report on Yatren Treatment.**—*China Med. Jl.* 1925. May. Vol. 39. No. 5. pp. 383–396. [20 refs.]

From July 1, 1922, to September 30, 1923, 6,200 patients were admitted to the Peking Union Medical College Hospital, and 54 (0·87 per cent.) were found to be suffering from amoebiasis. From October 1, 1923, to May 31, 1924, out of 1,800 patients, 129, or 7 per cent., were found to be similarly affected. The sudden increase in the percentage of positive findings is due to improved diagnostic procedures. Classified according to the coincident clinical symptoms it was found that of the second series of 129 positive for amoebiasis, 16·7 per cent. of the Chinese and 30 per cent. of the foreigners suffered from acute or chronic colitis, 3·1 per cent. of the former from liver abscess, 11·5 per cent. and 52 per cent. respectively from undefined gastro-intestinal symptoms, 33·3 and 9 per cent. from minor ailments, while 34·4 per cent. of the Chinese and 9 per cent. of foreigners were symptomless, healthy carriers. The hesitation felt in treating healthy chronic carriers of amoebic infection with such a debilitating drug as emetine-bismuth-iodide, induced the authors to try yatren on healthy carriers of *E. histolytica* amongst the employees with the idea of finding the minimum dosage which would effect clearance of the stools with the least discomfort and shortest absence from work. It was given in the following dosage—1st, 3rd, 5th and 7th days—0·5 gm. in gelatine capsules, six times daily ; 2nd, 4th, 6th, 10th, 14th and 21st days—3·0 gm. dissolved in 200 cc. of distilled water at 80 C. given as an enema. Rest in bed seven days and for half a day on the 10th, 14th and 21st days. Dietary arranged according to the degree of purgation. In acute cases of amoebiasis 0·065 gm. of emetine hydrochloride, in addition, was injected intramuscularly for 3–6 days till acute symptoms had subsided. Out of 19 cases treated with yatren 17, or 92 per cent., remained negative for a period of six months after completion of treatment. Examination was made of six consecutive stools. The patients passed stools free from *E. histolytica* cysts after the third day of treatment, so that in this respect yatren treatment does not differ from emetine-bismuth-iodide.

P. H. Manson-Bahr.

VOSS (J. A.). Nogen tilfaelder av amöbedysenteri. [**Some Cases of Amoebic Dysentery.**]—*Norsk Mag. f. Laegevidensk.* Kristiania. 1925. July. Vol. 86. No. 7. pp. 703–707. With 1 text fig.

A man of 56 was admitted to hospital in December with an attack of dysentery. The faeces were examined for dysentery bacilli with a negative result—not for amoebae, which were hardly thought of. The patient died. Ulcerative colitis was found at the autopsy, and amoebae in sections of the intestinal wall The next day the nurse contracted dysentery and many amoebae were discovered in her stools. Information was now obtained that the dead man's son had been in hospital in Calcutta with the disease, and that the father had fallen ill three days after the son arrived home The faeces of the son and of a friend of his, both sailors, showed the presence of encysted amoebae They had both been in hospital in Calcutta together with dysentery 3 or 4 months previously. After returning to Norway one of them developed an acute attack of dysentery, the motions consisting only of slime Motile forms of amoebae were found The three patients received 0·04 gm. emetine and 0·50 gm stovarsol per diem The nurse quickly got well, but it is too early to ascertain the effect of the treatment on the two chronic cases.

These cases prove that even in the middle of winter in Norway amoebic dysentery can be propagated by contact from one person to another, thus giving rise to small epidemics.

E. E. Atkin.

TRABAUD. Formes anormales de l'amibiase. [**Unusual Forms of Amoebiasis.**]—*Rev. Méd. et Hyg. Trop.* 1925. Sept.–Oct. Vol. 17. No. 5. pp. 193–198.

Septicaemic amoebiasis.—A careful description of two cases at Beyrouth :—

Case 1 Intermittent fever, icteric tinge in skin, biliary pigments and urobilin in urine , no malaria parasites found Negative blood culture , 20,000 leucocytes, 81 per cent polys, 14·5 per cent. L. monos No amoebae or cysts found in stools Later, enlargement of liver and diarrhoea developed and active *E histolytica* found in stools.

Case 2 Intermittent fever , mental confusion, unequal pupils, coma alternating with delirium Later enlargement of liver , C.S.F. normal. Negative blood culture , no malarial parasites found. Urine: albumen, bile salts and pigments, indican and much urobilin. 9,050 leucocytes, 85·5 per cent polys, 18 per cent L monos After his recovery this patient gave history of having been 2 months previously treated in hospital for diarrhoea with amoebae in stools

In both cases, after the failure of quinine and other remedies, emetine injections rapidly brought about convalescence. The author concludes that both cases were amoebicaemia. [A conclusion based on evidence that is somewhat slender.]

H. M. Hanschell.

MAYERS (Laurence H.) & HIRSCH (Edwin F.). **Differentiation of Amebic Dysentery from So-Called Idiopathic Ulcerative Colitis.**—*Amer. Jl. Med. Sci.* 1925. July. Vol. 170. No. 1. pp. 43–53. With 1 fig. [5 refs.]

A description is given of 6 cases of ulcerative colitis, in which amoebae, as the cause, were demonstrated. Careful search for amoebae should be carried out before a diagnosis of idiopathic ulcerative colitis is made The usual medication including large dose of kaolin, bismuth and other astringents is not indicated where the infection is amoebic. Because of the extensive ulceration and friability of the bowel wall in amoebic dysentery, the proctoscope should be used with extreme caution

H M H

PETZETAKIS Amibiase urinaire [**Urinary Amoebiasis.**]—*Bull Soc Path Exot* 1925 June 10 Vol 18 No 6 pp 478–485. With 2 figs on 1 plate [25 refs]

The author follows up his former publications on extra-intestinal amoebiasis with a detailed account of two cases of amoebiasis of the urinary system —

Case I Primary amoebic cystitis No previous dysentery patient aged 35 years complained of frequency of and pain during micturition prostate normal Urine contained some albumen no sugar After centrifuging it showed red and white blood cells epithelial cells no casts no renal cells active amoebae were found—many of them containing red blood cells Emetine injections were followed by disappearance of the amoebae in the urine and cessation of the symptoms

Case II Amoebic cystitis with haematuria in the course of amoebic dysentery In this case frequency of and pain during micturition began before the dysenteric symptoms The haematuria was noticed later after the dysentery onset Examination of faeces showed amoebae with sluggish movements The urine contained albumen no sugar and after centrifuging showed many red and white blood corpuscles and also active haematophagic amoebae After emetine injections amoebae disappeared from stools and urine and symptoms ceased

The author discusses these cases compares them with cases of extra-intestinal amoebiasis previously reported by him and by others, and refutes the possibility of these organisms being leucocytes , the microphotographs show clearly that they are amoebae He urges that amoebae should be looked for in all cases of cystitis, and that disinfection of urine in amoebiasis of any sort is necessary, as well as disinfection of stools and sputa

H M H

GARCIÁ FAURE (M) Un caso de amebiasis pulmonar solitaria [**Case of Amoebiasis of the Lung Alone.**]—*La Prensa Méd Argentina* Buenos Aires [Summarized in *Rev Española de Med Cirug* Barcelona 1925 Oct Vol 8 No 88 pp 577–578]

A man 44 years of age had had repeated attacks of dysentery at intervals but none for two years prior to coming to hospital complaining of pain in the back sweating, shivering, cough with expectoration of blood and chocolate-coloured pus No amoebae were found in the sputum but treatment with emetine hydrochloride subcutaneously [two series of daily injections of 0 08 gm were given but the number of injections is not stated] together with three intravenous injections of salvarsan led to great improvement and the patient was able to leave hospital, but he reported later that the cough and expectoration had returned as severely as before [The proof that the pulmonary condition was due to *E histolytica* appears to be somewhat slender]

H Harold Scott

MACNEAL (Ward J.) & KLEMPERER (Paul). **Amebic Abscess of the Liver.**—*Amer. Jl. Trop. Med.* 1925. Sept. Vol. 5. No. 5. pp. 339–349. With 8 text figs. [2 refs.]

A case of amoebic dysentery with liver abscess, terminating fatally. Typical in clinical history and course, but unrecognized until autopsy. The disease was contracted apparently in New York city. *Entamoeba dysenteriae* tends to travel through the blood stream. To avoid mistakes several staining methods should be employed to identify entamoebae in unusual locations.

H. M. H.

BURNIE (R. M.). **A Case of Empyema simulating Abscess of the Liver.** [Miscellanea.]—*Ann. Trop. Med. & Parasit.* 1925. July 16. Vol. 19. No. 2. pp. 261-262.

The clinical record of this case, which deals with the differential diagnosis of empyema from liver abscess, does not call for comment.

P H M-B.

MANSON-BAHR (Philip H.) & MORRIS (R. M.). **Yatren in the Treatment of Amoebic Dysentery. With a Note on the Results of Stovarsol in Certain Cases.**—*Lancet.* 1925. Sept. 12. pp. 544–546. [25 refs.]

Yatren. An account of four cases, all typical examples, of amoebic dysentery treated by yatren pills (1½ gm. daily) and yatren solution 2½ per cent.—200 cc. *per rectum*; controlled by periodical microscopic and sigmoidoscopic examinations. Maximal benefit is obtained only by yatren *per rectum* as well as by mouth. No toxic disturbances were noted. Cure is apparently permanent; the therapy is more pleasant to the patient than any other yet evolved, and no severe diet restrictions are necessary.

Stovarsol the authors regard as a valuable adjunct in the treatment of amoebiasis, especially of the chronic cyst passer. An account of two cases is given, in which apparent permanent absence of cysts was obtained by stovarsol, after E.B.I. had failed. To avoid toxic symptoms, two tablets (gr. 8) by mouth daily for 7 days, or one tablet (gr. 4) daily for 14 days, should not be exceeded.

H M. H.

MÜHLENS (P.). 5 Jahre Behandlung der Amöbenruhr mit "Yatren 105" [**5 Years' Experience of Yatren in the Treatment of Amoebic Dysentery.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Oct. 15. Vol. 29. No. 10. pp. 491–507. [46 refs.]

The author quotes KESSEL and WILDER (Singapore Congress, 1923):—

	Emetine.	*Yatren.*
Cost per treatment	Mex. dollars 5.60	Mex. dollars 6.40
Time in hospital	12 days	7 days.
Working days lost	26 days	9½ days

and concludes, in agreement with KOP and MANSON-BAHR, that yatren is indisputably the best and least toxic drug to-day for the treatment of amoebic dysentery. The author claims for it efficacy also in chronic colitis and bacillary dysentery. The importance of this drug in all attempts to stamp out the disease, by destroying amoebae and cysts in most dysentery cases and cyst passers, is emphasized.

H. M. H.

HUPPENBAUER (C. B.). Die Yatren-105-Therapie der Amöbenruhr. **[Yatren Treatment of Amoebic Dysentery.]**—*Muench. Med. Woch.* 1925. Oct. 23. Vol. 72. No. 43. pp. 1838–1840.

An address delivered to the German Society of Tropical Medicine on the 25th Anniversary Jubilee of the *Institut für Schiffs- und Tropen.-krankheiten,* Hamburg.

Just as the discovery and employment of emetine constituted, in its day, a triumph for tropical medicine, so yatren in turn, which replaces emetine in the treatment of amoebiasis, is a yet more notable triumph. Attention is drawn to the unanimity of satisfaction with yatren expressed by many authors, whom he names, in Germany, in Holland and the Dutch colonies, in China, Japan, South America, Belgium, and in the British Empire. The supreme test of the value of yatren is its efficacy in the treatment of chronic amoebiasis and its complications—just where emetine and E.B.I. failed. The five years that have elapsed since MUHLENS and MENK, of the Hamburg Institute, brought out the yatren treatment of amoebiasis have seen its spread world-wide as the treatment of choice for all amoebic conditions. It is claimed, not unjustly, as a veritable victory for German chemistry and pharmacology.

H. M. H.

i. DRBOHLAV (Jaroslav J.). Une nouvelle preuve de la possibilité de cultiver *Entamoeba dysenteriae* type *histolytica.* **[A Fresh Proof of the Possibility of Cultivating** *E. histolytica.*]—*Ann. Parasit Humaine et Comparée.* 1925 Oct. Vol. 3. No. 4. pp 349–357. [6 refs.]

ii. —— Culture d'*Entamoeba dysenteriae* type *tetragena minuta.* [**Cultivation of** *Tetragena* **Type of** *E. histolytica.*]—*Ibid* pp. 358–360.

i. The author claims to have given fresh proof of the possibility of culturing *E. dysenteriae.* He worked with two strains, isolated from patients in England, and a third strain from an autochthonous case in Paris. This French strain, actually 65 times subcultured during six months, was still in good condition. The amoebae had kept all their morphological and biological characters. Many attempts at subculture from infected cats proved always easy to effect. Several media were used; the most convenient as a routine measure is N.N.N. warmed. This medium serves well also for the culture of Trichomonas and Blastocystis. It was found that adding 1 per cent. dextrin to the Ringer's solution used in preparing the "ovomucoide" liquid added to the various solid media prevented the development of Blastocystis. Other details given concern the importance of pH reaction of the medium, temperature, and the amount of liquid used.

For success in amoeba culture certain prescriptions, given in this paper, must be strictly followed: Material must be freshly voided and warm. The medium must be at 37° C. at the moment of inoculation. To examine amoebae of any species, it is indispensable to use the microscope-in-warm-chamber.

The author expresses his acknowledgment to Professor BRUMPT and Dr. LANGERON for suggestions and help in this work and for laboratory room.

ii. *E. dysenteriae* type *tetragena minuta* was cultivated in the same way as *E. dysenteriae* type *histolytica*; morphological characters are practically the same, but their biology differs somewhat. The absence of haematophagous amoebae in a cat inoculated with cultures of *minuta* and the failure to cultivate *minuta* in vitro with red blood cells is in contrast to what happened with *histolytica*. 38 subcultures of *minuta* had been obtained in 3 months.

H. M. H.

GUÉRIN (F. H.) & PONS (R.). Culture d'*Entamoeba dysenteriae* par le procédé de W. C. BOECK et Jaroslav DRBOHLAV. [**Cultivation of** *E. dysenteriae* **by Boeck and Drbohlav's Method.**]—*Bull. Soc. Path. Exot.* 1925. July 8. Vol. 18. No. 7. pp. 517–520. [1 ref.]

The authors claim that their experiments confirm the results obtained by BOECK and DRBOHLAV in the cultivation of *Entamoeba dysenteriae*, and also GAUDUCHEAU'S results in cultivating *Endolimax phagocytoides*.

H. M. H.

GUPTA (B. M. Das). **A Note on the Cultivation of an Entamoeba from a Monkey** (*Macacus Rhesus*).—*Indian Med. Gaz.* 1925. July. Vol. 60. No. 7 p 323 [2 refs.]

Following the technique of BOECK and DRBOHLAV, the author has cultivated not only an Entamoeba taken from a monkey 4 hours after the monkey's death, but also *E. histolytica* from kittens infected from a hospital case of dysentery.

A. A.

BRUMPT (E.). Étude sommaire de l' "*Entamoeba dispar*" n. sp. Amibe à kystes quadrinucléés, parasite de l'homme. [**Brief Study of** " *E. dispar* " **n. sp., an Amoeba of Man with Quadrinucleate Cysts.**]—*Bull. Acad. Méd.* 1925. Nov. 3. Year 89. 3rd ser. Vol. 94. No. 35. pp. 943–952. With 1 text fig.

Since WALKER and SELLARDS published their classical researches in 1913, it has been generally recognized that persons infected with *Entamoeba histolytica* are of two different kinds—those who are more or less healthy and display no clinical symptoms, and those who suffer from more or less grave disorders attributable to their infections. Amoebic carriers of these two classes—distinguished by WALKER as " contact " and " convalescent " carriers respectively—have been frequently discussed, and various more or less unsatisfactory " explanations " of their existence have been advanced. In the present note Prof. Brumpt revives an explanation previously offered by SHIMURA, and others, and already rejected by the majority of competent workers: namely, that the difference between a contact and a convalescent carrier is referable to a specific difference subsisting between their amoebic parasites. Brumpt, in fact, now maintains (though he does not express himself in these words) that the species of amoeba generally called *E. histolytica* (=*E. dysenteriae* of Brumpt) really comprises two distinct species—a pathogenic one, to which he restricts the familiar name, and a non-pathogenic one for which he proposes the new name *E. dispar*. In his view, accordingly, the " healthy contact carrier of *E. histolytica*" displays no symptoms because he is not really infected with *E. histolytica* at all, but with a very closely similar though entirely harmless organism.

This interpretation is here supported by a series of observations made upon a subject infected with "*E. dispar.*" From the facts and experiments recorded, it appears that the amoeba in question is not distinguishable morphologically from *E. histolytica*—a weighty argument against its specific individuality—but by various minor diversities of a physiological order The organism is said to live in its human host as a commensal—not as a tissue parasite. In cultures, likewise, it lives saprozoically It is far less avid of red blood-corpuscles than is *E histolytica.* It is less pathogenic for the cat—infecting this animal less readily, and causing in it a more superficial ulceration. And it is further distinguished "by its vast geographical distribution, and the immense number of individuals in which it is found."

Apart from its mode of nutrition in the human host, "*E. dispar*" thus appears to differ from *E. histolytica* in no specifically significant feature. And even this character now seems dubious: for the work of BOECK and DRBOHLAV [see this Bulletin, Vol. 22, p 727] has shown that typical pathogenic strains of *E. histolytica* are able to live saprozoically in cultures, and if they can do so outside the body, it is at least possible that they can do the same inside it

Attentive perusal of this note cannot fail to reveal, to any experienced student of the intestinal amoebae of man, that it deals not with a "new species" but with an old friend—or enemy—under a new name. "*E. dispar*" depends, for its validity as a species, upon a certain interpretation of particular facts already well known and recorded, while other facts—which are not here discussed—can be adduced with even greater force against it We have already, for example, experimental evidence from WALKER (1913) to show that infection with the same strain of *E. histolytica* may give rise to amoebic dysentery in one man, but not in another. According to Brumpt's interpretation it would seem that the very same species of amoeba would here be called "*E. dysenteriae*" in the one host and "*E. dispar*" in the other—if its "pathogenicity" were regarded as a specific criterion.

When all the facts relating to amoebic carriers are fully known, they will doubtless speak for themselves. Meantime, there may be some workers who will regard Brumpt's arguments as conclusive, though there must be many others who—like the reviewer—will consider that "*E. dispar*" is merely another unwelcome addition to the already overlong list of synonyms of *E. histolytica.*

Clifford Dobell.

BACILLARY DYSENTERY.

VAN HOOF (L.). Au sujet d'une épidémie de dysenterie bacillaire dans le Mayombe (Congo belge). **[Epidemic of Bacillary Dysentery in Mayombe (Belgian Congo).]**—*Bull. Soc. Path. Exot.* 1925. July 8. Vol. 18. No. 7. pp. 532–541. [2 refs.]

Bacillary dysentery appears sporadically throughout the Congo, with occasional epidemic outbursts, often severe, determined by varying circumstances—such as famine or intercurrent disease, *e.g.*, trypanosomiasis. The author gives a clinical description of the cases and the result of his bacteriological investigations. Hiss type was most often isolated, next in frequency Shiga, and Flexner type least. d'Hérelle's bacillus was also found. Though tried in a few cases only, a vaccine given by mouth proved satisfactory.

H. M. H.

SMITH (H. W.). **Report of an Outbreak of Bacillary Dysentery at the United States Naval Hospital, Canacao, P.I.**—*U.S. Nav. Med. Bull.* 1925. July. Vol. 23. No. 1. pp. 74–75.

An outbreak of bacillary dysentery commenced in February, 1925, lasting one month; there were in all 19 cases. The source of infection was thought to be tomatoes. The organism responsible was found to be the Flexner-Y bacillus. Antidysenteric serum administered early was followed by a serum rash in 13 cases; there were no deaths.

P. H. M–B.

BOLTON (J. Shaw) & MCGRATH (M. J.). **Asylum Dysentery and Allied Infections (Sixth Post-War Report).**—*The Eleventh Annual Report of the Board of Control for the Year 1924. Lunacy and Mental Deficiency.* pp. 120–122.

Were it not for the ever-present possibility that an epidemic might be started by some patient who had not agglutinated Flexner's bacillus when tested, but who was nevertheless a "carrier," it would be justifiable to investigate admissions only. The authors' report shows that their clinico-bacteriological methods now readily enable a threatened epidemic to be successfully coped with During the year Flexner bacillus had been isolated from 4 cases. One of these affords a useful proof of the value of testing the agglutination reaction of the serum. This patient was found on admission to agglutinate Flexner bacillus 1/100. This enabled prompt isolation; later the bacillus was isolated from the stool

H. M. H.

WATSON (G. A.) & AINSWORTH (C G.). **Dysentery.**—*The Eleventh Annual Report of the Board of Control for the Year 1924. Lunacy and Mental Deficiency* pp. 128–129.

All patients suffering from diarrhoea have their stools microscopically and bacteriologically investigated. Eleven cases of dysentery, Y strain of *B. dysenteriae*, were thus diagnosed and isolated. Of 64 cases of diarrhoea, negative for dysentery bacilli, 54 appeared to be "simple," 4 flagellate, and 6 tuberculous in origin. Tests carried out in 125 cases for "clearing" purposes or for detection of carriers revealed no dysentery bacillus infection, nor was any typhoid or paratyphoid organism found. In order to obtain precise data concerning the ability of *B. dysenteriae* to survive without a host, in a dry state exposed to light, air, varying temperature, etc.—as is possessed by bacteria commonly cultured from dust and sweepings—cultures were made from saline washings from (1) lavatory and bathroom seats, catches, handles, ledges, skirtings and finger marks on walls; (2) dust from skirtings and furniture, sweepings in ward and day room; (3) kitchen utensils; and (4) drinking water from taps. No dysentery organisms could be isolated.

H. M. H.

ROSENBAUM (S.). Zur Diagnostik und Therapie der Säuglingsruhr. **[Diagnosis and Treatment of Infantile Dysentery.]**—*Deut. Med. Woch.* 1925. Aug. 14. Vol. 51. No. 33. pp. 1358–1361. [25 refs.]

The author describes his experiences in the treatment, diagnosis, and prevention of infantile dysentery. They fall into line with the well-known and established general methods of treating such cases. Latterly he had found a dysentery bacillus vaccine, given subcutaneously to all children admitted to his clinic, useful in preventing dysentery.

H. M. H.

LIPPINCOTT (Leon S.). **A Case of Bacillary Dysentery contracted in the Laboratory.**—*Jl. Amer. Med. Assoc.* 1925. Sept. 19. Vol. 85. No. 12. p. 901.

On June 21, while doing agglutination tests to identify a recently-isolated culture of dysentery bacilli, the operator drew into her mouth through a pipette some of the broth culture. She at once washed out mouth with 95 per cent. alcohol, and then reported the accident. She was given chlorine water, 1 drachm 3-hourly, and mag. sulph. sat. sol. 2 drachms 2-hourly; diet to contain no uncooked food. The mag. sulph. was continued until one ounce had been taken; the chlorine water for 3 days. A vaccine from the culture being tested was given, beginning June 24. The culture proved to be Flexner type —both to agglutination and to sugar reactions. June 27 diarrhoea began—much mucus; blood present to microscope only. Culture of stool planted June 28 grew Flexner type bacilli. Chlorine water continued, and vaccine administered at 4-day intervals. Diarrhoea lasted 3 days, then ceased. On July 8 and July 17 cultures from faeces proved negative for dysentery bacilli. The treatment adopted probably determined the mild course and favourable outcome of the infection.

H. M. H.

ALIVISATOS (G. P.). Heilungsversuche bei Ruhr mit Hilfe eines per os gegebenen Schutzstoffes. **[Dysentery treated by a Vaccine given by Mouth.]**—*Deut. Med. Woch.* 1925. Oct. 16. Vol. 51. No. 42. pp. 1728–1731. With 2 text figs.

The cases were treated with a bacillary emulsion of Shiga-Strong-Flexner types given by mouth. The author concludes from his experience that a large percentage of cases of bacteriologically-proved dysentery and cases of clinical dysentery are favourably and rapidly influenced by this method of treatment. It shows a parallelism with specific serum therapy. No satisfactory explanation of the action of this remedy is yet forthcoming.

H. M. H.

HOSHI (Naotoshi). **On the Types and the Toxicities of the Bacilli of Child Dysentery in Manchuria.**—*Jl. Oriental Med.* 1925. Mar. Vol. 3. No. 1. English summary p. 45. [In Japanese.]

This paper embodies an investigation of infantile dysentery in Darien Hospital, and has special reference to the toxicity of several types of dysentery bacilli. The most prevalent type was the Y bacillus, which accounted for 44 per cent., Shiga's bacillus came next in prevalence, and then Hiss' fourth type. The general symptoms of infantile dysentery were somewhat slighter than in recent years. In the original Shiga type the mortality was nil, but in the third variety type it amounted to 29 per cent.

P. H. M-B.

KLUGH (George F.). **Bacteriological Findings in Acute Dysentery in Children.**—*Southern Med. Jl.* 1925. Oct. Vol. 18. No. 10. pp. 709–710.

A preliminary report of work done on acute dysentery in children with blood and mucus in stools. Smears were made from particles of bloody mucus and stained by Gram, which shows presence or absence of streptococci ; and cultures, from particles of bloody mucus, were made on litmus lactose agar plates, 3 plates for each specimen. Colonies were then picked off for agglutination and further confirmatory study. Cultures from stools from normal infants are negative for dysentery bacilli.

Vaccination with repeated small doses of dysentery bacilli has been tried with apparently good preventive results. This seems to be the most feasible prophylaxis, especially during epidemics. For treatment antidysentery serum gives good results if used early. Theoretically lactose and acidophilus milk are ideal foods for dysentery patients.

The author found acute dysentery in children to be due to *Bacillus dysenteriae*, Flexner type ; and to streptococci.

[The reviewer would point out that " purging " of any sort of case will show excess of streptococci in the stool, and that in the stools of healthy infants streptococci predominate.]

H. M. H.

DUMAS (J.), RAMON (G.) & BILAL (Said). Les propriétés immunisantes de l'anatoxine dysentérique. [**The Immunizing Properties of the Dysenteric Anatoxin.**]—*C.R. Acad. Sci.* 1925. July 27. Vol. 181. No. 4. pp 198–199. [1 ref.]

Broth culture of Shiga bacillus incubated at 37° C. for 15 days, filtered through Chamberland F., and 0·01 cc. of filtrate injected into vein of 2 kilo weight rabbit killed the animal in 2 or 3 days. 4 cc. of formaldehyde (commercial solution 40 per cent) was added to a litre of this toxin (filtrate) and the whole incubated at 37° C. for 40 hours. An intravenous injection of 10 cc. of this heated toxin had no effect on a rabbit. A number of rabbits were given subcutaneous injections of 0·5 cc. of this liquid and 8 days later 1 cc. 16 days later the animals tolerated 8 lethal doses of dysentery toxin injected intravenously ; or 6 lethal doses of a 24-hours Shiga broth-culture, given subcutaneously. In the formol treated and incubated filtrate, dysentery toxin had been altered to anatoxin.

Horses were vaccinated, at 6 to 8 days interval, with progressive doses, 10 to 500 cc of dysentery anatoxin Horses tolerate with difficulty a dose of 50 cc of dysentery toxin The serum of horses treated with the anatoxin rapidly acquired antitoxic properties Many titrations on the mouse showed that the anatoxin treated horses' serum in doses of $\frac{1}{200}$ $\frac{1}{300}$ $\frac{1}{400}$ of a cc, neutralized 6 lethal doses of toxin

Three men were given a subcutaneous injection of 1 cc of anatoxin No general, and very slight local reaction followed Fifteen days later the serum of these persons neutralized respectively, 1 to 3 lethal doses for the rabbit Under like conditions normal human serum was without effect Dysentery anatoxin therefore caused the production of immune antibodies in rabbit, horse, and man Protective vaccination of man with dysentery anatoxin is thus envisaged

H M H

i LESBRE (Ph) Immunisation experimentale par anatoxines contre le bacille de Shiga [**Experimental Immunization against Shiga's Bacillus by Anatoxins.**]—*C R Soc Biol* 1925 Aug 14 Vol 93 No 27 pp 612–613 [2 refs]

ii —— Bacteriophage et anatoxine dans la vaccination antidysenterique par voie buccale [**Bacteriophage and Anatoxin in Vaccination against Dysentery by the Mouth.**]—*Ibid* pp 614–615

i From the results of experimental work on the immunization of rabbits by formol-treated Shiga bacillus anatoxin, injected subcutaneously or given by mouth the author feels justified in claiming that the immunization of man against bacillary dysentery is brought nearer and in particular the solution of the problem of vaccination by the oral route

ii The bacteriophage immunizes satisfactorily against the less toxic Flexner bacillus bacteriophagic lysis differs from anatoxin in that it exhibits the products of bacillary destruction only while the anatoxin carries as well products of bacillary secretion set free during its preparation The high immunizing value of anatoxin is due to its preponderant content of these exotoxins

H M H

PERRY (H Marrian) & COPPINGER (C J) **Observations on the Employment of Anaerobically-Grown** *Bacillus dysenteriae* **Shiga as a Vaccine.**—*Jl Roy Army Med Corps* 1925 Oct Vol 45 No 4 pp 241–250 With 2 charts in text [5 refs]

This paper cannot be fairly summarized The authors conclude from their experiments that —

(1) Suspensions of *B dysenteriae* Shiga anaerobically cultured, can be inoculated into man and animals in large doses without causing excessive local or general reaction

(2) Such inoculations produce in blood agglutinating and complement-fixing antibodies to an extent comparable with that following inoculation of Shiga bacilli aerobically grown

(3) There is some evidence that an animal inoculated with suspension of anaerobically-grown organisms can withstand doses of suspension of aerobically-grown bacilli which were fatal to unprotected animals.

(4) A mixed vaccine of bacilli of the mannite-fermenting dysentery group, together with anaerobically-grown Shiga bacilli can be administered to men without causing reaction greater than that following typhoid-paratyphoid inoculation, and produces agglutinins for both types of organism

H M H

BOKU (Shokun) **On the Proportion of Diagnostic Serum for** *Bacillus dysenteriae* **Shiga.**—*Mitt a d Med Akad z Keijō* 1925 Vol 8. No 4 pp 33–55 With 6 text figs [42 refs]

1 In order to get a special agglutinating serum from rabbits for Shiga bacillus a heated bacillus must be used

2. Shiga bacillus heated under 65° C is toxic to rabbits

3 A strongly agglutinating serum can be got with bacilli heated to 75° C even with small doses but rabbits can stand even larger doses of 85° C heated bacilli

4 Immunization is best obtained with bacilli heated to 100° C. This vaccine given intravenously is only slightly toxic, and produces a strongly agglutinating serum within a short time

5 Standardization of injection dosage is difficult, as different rabbits show varying agglutinating powers

6 Rabbits serum with heated bacillus is best used for diagnostic purposes as it gives negative reaction with other intestinal bacilli

7 With serum of rabbits immunized as above unheated bacillus should be used

The virus for immunizing was prepared as follows 24 hours' incubation of Shiga bacillus on agar from this take 10 mgm of bacteria and add 10 cc of 0 05 gm carbolic acid This gives solution 1 Further solutions are made by heating the first bacterial emulsion without carbolic acid to 65° C (2nd sol) 75° C (3rd sol) 85° C (4th sol) and 100 C (5th sol) in water bath for one hour, cool and add 0 05 gm carbolic acid These several solutions were injected into the vena auricularis posterior of the rabbit

H M H

PRZESMYCKI (I) Z badań nad czerwonka [**The Standardization of Dysentery Sera.**]—*Medycyna Doswiadczalna i Społeczna* Warsaw 1925 July–Aug Vol 5 No 1–2 pp 18-41 [55 refs] German summary p 41

This research was carried out at the Warsaw Serum Institute, at the instigation of the Health Committee of the League of Nations The production of Shiga-Kruse toxin was investigated, and found to originate with the nutrient medium changing from acid to alkaline The toxin appeared to be single No division into exo-toxin (nerve poison) and endo-toxin (intestinal poison) was established Immunizing horses with young or old cultures produced the same quality serum The dysentery toxin is combined with the serum according to a definite rule of multiple proportion The combining power of the several fluid toxins was generally the same Dried toxin had a higher combining power Titration of the bactericidal substance gave varying values WAHL'S method was employed for titrating the antitoxin *in vitro.*

H M H

Calalb (G.). Retour des bacilles dysentériques atypiques aux types dysentériques vrais, après passage par l'organisme. **[Return of Atypical to True Dysentery Bacilli after Animal Passage.]**—*C.R. Soc. Biol.* 1925. Aug. 14. Vol. 93. No. 27. pp. 729–730. [1 ref.]

The author has previously shown that para-dysenteric bacilli, recovered from the stools of old dysentery patients after true dysentery bacilli had disappeared, were not agglutinated by anti-Shiga and anti-Flexner serums; on the other hand, used as antigens a serum can be obtained which agglutinates them as well as the Shiga-Flexner, or the Flexner group alone. After intraperitoneal passage through the rabbit it was found that these paradysenteric bacilli, besides regaining, in some cases, the power to ferment all the. sugars, were now all agglutinated by anti-Shiga serum, and had lost completely the property of being agglutinated by serums for which they had acted as antigens, and by which they had been agglutinated before the rabbit passage Bacteriological investigation, before the experiments, showed the rabbits' faeces to be free from dysentery or para-dysenteric bacilli.

H. M. H

Burgdorf (Richard) Ueber Normalagglutinine fur Ruhr- und andere Bazillen **[Normal Agglutinins for Dysentery and other Bacilli.]**—*Cent f Bakt* I Abt Orig 1925 Aug 1 Vol 95 No 7/8 pp 417–423 With 2 charts in text [6 refs]

A purely bacteriological paper describing, and discussing, the variations in agglutination power of human blood serums against dysentery and pseudo-dysentery bacilli, the author considers much further research on these variations to be necessary

H M H

Adachi (Kiyohisa) & Kubo (Tadawo) **[Studies on Antidysenteric Vaccine.]**—*Tokyo Iji-Shinshi* (*Tokyo Med News*) 1925 May. No 2419 [Summarized in *Japan Med World* 1925 July 15. Vol 5 No 7 p 184]

Shiga bacillus, which gave severe reaction, was heated over a water bath for one hour Flexner, Hiss and Okhara strains were all treated after the routine method of preparing sensitized vaccine The above four lots were mixed so as to obtain a vaccine having bacterial content 1 mgm to 1 cc (0·25 of each strain in 1 cc) The authors claim good results from this vaccine

H M H

Kasuga (Kenzo) & Goto (Ki) **[An Endo's Fuchsin Agar on which the Dysentery Baccillus can be cultivated.]**—*Gun-I-Dan Zasshi* (*Jl Japan Military Med Assoc*) 1924 June No 133 [Summarized in *Japan Med World* 1925 June 15 Vol 5 No 6 p 161]

This medium is claimed as a good one for the cultivation of both dysentery and typhoid bacilli

Agar powder ..	30·0	Refined meat extracts (Arrow)	15·0
Teruuchi's peptone ...	25·0	Anhydrous sodium bicarbonate (enough to neutralize peptone)	0·7
Table salt	4·1	Powdered lactose	20·0
Grübler's fuchsin ...	0·3	Anhydrous sodium sulphite ..	1·75

First grind powdered agar with meat extract, sodium bicarbonate, and table salt heat mixture at 50° C, for 8–10 hours, until completely dry. Mix and grind lactose and pepsin, and add them to first mixture. Finally add peptone and anhydrous sodium sulphite and mix well: put up in ampoules

H. M. H.

MIXED AND UNCLASSED DYSENTERY.

TEODOSIJEVITS. Kalziumbehandlung der Dysenterie. [**Calcium Treatment of Dysentery.**]—*Deut. Med. Woch.* 1925. Sept. 25. Vol. 51. No. 39. p. 1620.

In the district of Valjevo (Serbia), summer and autumn often bring epidemics of dysentery of varying extent and severity. The author had found various serums and drugs useless to lower its mortality. Calcium chloride solution given intravenously surpassed all other remedies and changed, at a stroke, the whole picture of the disease. From its use cure was certain and lasting and rapid As samples of its action, details of three cases are given. They showed prostration, high fever, very frequent blood and mucous stools, tenesmus and colic. 10 cc of a 10 per cent solution of calcium chloride was injected intravenously morning and evening, together with a subcutaneous injection of morphia Cessation of symptoms and convalescence with no relapse followed rapidly. Its use in other diarrhoeas is advocated.

H. M. H.

PERUZZI (Mario) La Vibriothrix Zeylanica (Castellani) nei dissenterici di Pola [*Vibriothrix zeylanica* **in Dysenteric Patients at Pola.**]—*Ann di Med Nav e Colon* 1925 May June. Year 31. Vol 1 No 5–6 pp 255–256

This organism was isolated by the author from the dysenteric stools of a soldier. It was cultivable in blood-broth and showed much pleomorphism—undulating forms with a narrowed extremity, spirillar and spirochaetal forms, branching forms, and others pyriform or spherical Inoculation in large doses intraperitoneally into a guineapig produced fatal general peritonitis in 30 hours, smaller doses led to the establishment of immunity reactions 10 days after the first injection, Widal, Pfeiffer, and Bordet-Gengou reactions all being obtained It is designated a Vibriothrix for the following reasons: 1. On account of the branching mycelial growth with spore-formation it is allied to the Fungi Imperfecti 2 Its ready cultivability and its power of acting as an antigen and producing agglutination reactions are bacterial characters. 3. Spirochaetal forms and the evidence of differentiation in the nucleus of binary fission and chromidial fragmentation are suggestive of protozoal nature.

More detailed work upon this organism is to be published later.

H. Harold Scott.

KURUP (P K) **A Case of Choleraic Dysentery.**—*Indian Med Gaz.* 1925 July Vol 60 No 7. p 325

A clinical account of an algid cholera-like case, ending fatally. No post-mortem examination The author considered the bloody stools strong evidence against cholera Ten days previously 3 cases of cholera had been reported in the place whence came the patient The Editor, *Indian Medical Gazette* appends a note—"possibly a fulminating case of Shiga bacillus infection"

H M H

Mueller (Ernst Adolf) Ein Beitrag zur Frage der Dysenteriebehandlung [**Treatment of Dysentery.**]—*Med Klin* 1925 Aug 21 Vol 21 No 34 (1080) pp 1270–1271 [18 refs]

An account of the cases of dysentery, in the author's medical care, occurring among German, Austrian and Turkish prisoners of war in the camp at Tel el Kebir, Egypt, in 1919 A painstaking paper which discloses nothing novel

H M H

Callender (George R) **The Cytological Diagnosis of Dysenteric Conditions and its Application in the Military Service.**—*Milit Surgeon* 1925 June Vol 56 No 6 pp 686 699 With 1 plate [16 refs]

The methods of cytological diagnosis in the dysenteries on the lines worked out by Haughwout are discussed The application of these methods is especially suited to army conditions

P H M-B

Petzetakis (M) Coccidiose intestinale aigue guérie rapidement par l'émétine [**Acute Intestinal Coccidiosis rapidly cured by Emetine.**]—*Arch des Malad de l'Appareil Digestif* 1925 Mar Vol 15 No 3 pp 264–266, also in *Rev Méd et Hyg Trop* 1925 May–June Vol 17 No 3 pp 139–141

Two almost identical reports of a case of infection with *Isospora hominis*, apparently in Alexandria Vague intestinal disturbances were followed by acute dysenteric symptoms, but without visible blood in the glairy stools Intramuscular injections of emetine gave relief speedily

A Alcock

Baumann (E D) De dysenterie te Nijmegen in 1736 —*Nederl Tijdschr v Geneesk* 1925 Aug 1 Year 69 2nd Half No 5 pp 605–619 [39 refs]

Hoshi (Naotoshi) [On the Types and the Toxicity of Bacillus of Child Dysentery in Manchuria]—*Manshyu Igaku Zasshi* (*Jl of Manchurian Med Soc*) 1925 Mar Vol 3 No 1 [Summarized in *Japan Med World* 1925 Aug 15 Vol 5 No 8 p 220]

Kohno (Yuji) [Clinical Bacteriological Studies on Dysenteric Cases]—*Iji Shimbun* (*Med News*) 1925 June No 1165 [Summarized in *Japan Med World* 1925 Aug 15 Vol 5. No 8. p. 218]

Petridis (Pavlos A) Un cas d'abcès du foie tropical à forme apyrétique —*Rev Méd et Hyg Trop* 1925 July–Aug. Vol 17 No 4 pp 173–184

—— Abcès sus-diaphragmatique droit consécutif à la rupture lente dans la plèvre correspondante d'un abcès du foie tropical siegeant à la face convexe du lobe droit —*Ibid* Sept-Oct No 5 pp 208–212

Watanabe (Koohei) [On the Mutation of the Dysentery Bacillus]—*Eiseigaku Densenbyogaku Zasshi* (*Jl Hyg & Infect Dis*) 1925 Feb Vol 20 No 4 [Summarized in *Japan Med World* 1925 Aug 15 Vol 5 No 8 pp 225–226]

SPRUE.

ASHFORD (Bailey K.). **Sprue.**—*Ann. Clin. Med.* 1925. July. Vol. 4 No. 1. pp. 13–20.

While sprue is primarily a tropical disease, it is becoming more apparent that it is spreading in the southern parts of the United States, as well as in China and Korea

The present paper is founded upon the evidence and clinical impressions derived from 2,500 cases Sprue is considered to be one of the most marked examples of a disordered mechanism which makes the colonization of a specific organism—the *Monilia psilosis*—possible. After a restatement of the author's well-known views on the etiology it is recorded that, in a small number of examinations of duodenal secretion recovered by the Einhorn tube from undoubted cases of sprue, half revealed no lipase, while the other showed a well-marked insufficiency In treatment the diet in the majority of cases should exclude all cereal foods and their derivatives such as would enrich the intestinal medium for *Monilia psilosis* The value of calcium salts, first exploited by charlatans in the form of cuttlefish bone and powdered crab's eyes, was soon proved by the author who, independently of SCOTT, combined it with parathyroid He believes this to be of definite benefit, but the *modus operandi* is by no means settled

Positive benefit has followed the use of *Monilia psilosis* vaccines in the vast majority of cases In order to subject the vaccine therapy to a severe test, it became necessary to employ vaccines only, to withhold all drugs, and encourage an excess of fats, cereals and sugar. Of 15 such persons, 10 had very severe or cachectic types of sprue. Two of these cases were cured, the symptoms disappearing in 81 days Three others were liberated of all evidences of sprue in an average of 65 days, but have not gained in weight Of the remainder 4 were improved and 1 is dead Injections were given, as a rule once weekly, of a 1 per cent sediment of killed culture of *Monilia psilosis* suspended in normal salt solution in an ascending scale of dose from 0·1–1 cc Eight injections were required as a rule In a fair proportion of those inoculated there is generally noted on the second or third day weakness, increase of meteorism, diarrhoea, and an exacerbation of sore tongue.

While cures of sprue apparently occur from diet alone, and even at times follow quite inexplicable procedures, prolonged observation seems to justify the employment of specific vaccines. Sprue is no longer the necessarily fatal disease it was formerly considered to be. Considering all grades of the disease which exist in the Antilles, one should not expect a mortality of over 5 per cent

P H Manson-Bahr.

JOHNSON (Gertrude) & BREIDIGAIN (F T) **Tropical Sprue in a Child Six Years of Age. With Isolation of Monilia from Patient and Tissues of Inoculated Animal.**—*Amer Jl Med Sci* 1925 Sept Vol 170 No 3 pp 364–371 With 4 figs [6 refs]

The authors record the clinical history of a child of six years of age who, after return from India, was subject to diarrhoea and intestinal disturbances At a "famous school of tropical medicine" her illness was diagnosed as Hirschsprung's disease and later in London as tubercular enteritis On admission to the hospital under the authors' care her case was diagnosed without difficulty as sprue, on account of the typical appearance of the tongue, aphthae and stools. In the latter *Monilia psilosis* was demonstrated without difficulty, and the same organism was cultured from the faeces and tongue. The culture failed to be agglutinated by the patient's serum, but a positive complement-fixation was obtained with an antigen isolated from the stool and tongue scrapings. From a rabbit injected with 1 cc. of a living suspension of the organism which died with multiple pyaemic abscesses in both kidneys the organism was recovered. Treatment consisted of light tonic hydrotherapy and cleansing enemas, followed by a liquid culture of *B. bulgaricus* and *B. acidophilus*, to be retained. Her dietary was confined to acidophilus buttermilk and bananas Improvement rapidly commenced and was completed by a course of injections with autogenous vaccine, which occasioned localized abscesses at the site of injection. Her weight increased from 27 to 42 lbs., and gradually, within six months, all symptoms disappeared, the improvement being attributed to the vaccine treatment.

P. H. M-B.

HORNADAY (W. A.). **Sprue—with Report of a Case.**—*U. S. Nav. Med Bull.* 1925. Aug. Vol. 23. No. 2. pp. 106-111.

An account of a case of sprue which originated in Porto Rico, in which three relapses occurred. Recovery eventually took place on a milk diet aided by calcium lactate and parathyroid therapy. The *Monilia psilosis* was isolated during the primary attack, but not subsequently.

P. H. M-B.

THAYSEN (Th. E. Hess). **A Disease resembling Tropical Sprue originating in Denmark.**—*Acta Medica Scandinavica.* 1925. Vol. 42. No. 3-4. pp. 197-212. [12 refs.]

A year ago the author demonstrated in Copenhagen a case of disease which greatly resembled sprue in its general clinical features, as well as in the loss of fat and in the high fat-content of the faeces; but the patient had never been in the tropics. Since then he has investigated four other cases, and can state that sprue, or a sprue-like condition, occurs in Denmark in patients who have never been beyond its confines.

He recognizes the following three disease forms: (1) Indian white diarrhoea=fatty diarrhoea; (2) sprue=fatty diarrhoea+stomatitis; (3) Psilosis linguae=Ceylon sore mouth=stomatitis aphthosa.

The first case here reported was in a manager of a dairy, aged 64, who suffered from diarrhoea, with the passage of 5-6 watery, white, voluminous and fermented motions in the 24 hours. On a test diet the total fat consumed was 190 gm., the fat lost 13 per cent. Nitrogen consumed was 30·8 gm., nitrogen excreted 3·3 gm., nitrogen lost 11 per cent.

The second patient, a clerk, 32 years of age, had never been out of Denmark. In childhood he had suffered from osteomyelitis, and at 15 was operated for appendicitis, after which a troublesome diarrhoea commenced, and has persisted ever since. From an early date he had been troubled with stomatitis; an interval of 10 years elapsed before the onset of the diarrhoea. The motions were sprue-like ; the fat-loss being 29 per cent., nitrogen loss 12 per cent.

The third case was in a tailor, aged 49. Diarrhoea had, apparently, been noted from boyhood, and for 8 years had been so severe as to call for medical attention. During an acute attack tetany had been noted. Recurrent attacks of stomatitis were accompanied by degenerative blood changes of a pernicious character. The fat-content of the faeces was 32 per cent.

It will be noted that both these patients had suffered from periodic recurrences of diarrhoea for many years before they developed the condition resembling sprue.

The fourth case was in a ship's engineer, aged 54, who had not been in the tropics for 26 years, but had been engaged almost continuously in Greenland. Stomatitis commenced 2 years ago, though the diarrhoea had lasted only 3 months. The stools (3 to 4 a day) were typical in appearance. The faeces were bulky, fat-loss being 60 per cent., nitrogen-loss 25 per cent. ; there was slight anaemia. Interference with pancreatic function was suggested by the presence of glycosuria.

[The clinical histories of the patients recorded in this paper are summarized at a greater length than is customary mainly on account of the importance of this communication. Many points may be emphasized against the acceptance of the diagnosis of true tropical sprue in all the cases recorded. The weights of the stools passed are, with the exception of the 4th (6–12 ozs.), small for true sprue. The length of the duration of the diarrhoea, unaccompanied by great and progressive emaciation, is another important point. The almost total absence of accompanying anaemia appears remarkable. The fourth was a syphilitic, while the concurrent glycosuria would point to the pancreas as the primary factor. Glycosuria in true sprue is undoubtedly very exceptional.]

P. H. M–B.

SLEEPING SICKNESS.

KINGHORN (Allan) **Human Trypanosomiasis in the Luangwa Valley, Northern Rhodesia.**—*Ann Trop Med & Parasit* 1925 Sept. 30 Vol 19 No 3 pp 281-300

This paper opens with a discussion of the physical aspects of the Luangwa Valley, of the distribution of game and fly, and of the history of sleeping sickness in the Valley

The observations now dealt with were made during 1913 and the early part of 1914, and after the conclusion of the War from 1920 onwards Kinghorn relied on gland palpation and puncture as a means of diagnosis, and only departed from this method in exceptional cases and for special reasons, *e g* , where the illness appeared clinically to be sleeping sickness, but no palpable glands were found

Sleeping sickness was found to be very widely distributed in Petauke, Serenje, Fort Jameson, Lundazi, Mpika and Chinsali portions of the Valley It is, however, comparatively rare, as during 1913–14 only 19 cases were found amongst 23,113 natives examined, and in 1921 only two cases amongst 5,947 Evidence is produced that there is a general tendency of the disease to remain stationary over a period of years A very striking feature of the infection is the remarkably sporadic manner in which it occurs Not only are the cases found in villages widely separated, but they are also usually found occurring singly, and cases in the same village may be separated by an interval of years This fact is clearly brought out in the tables Kinghorn finds in this peculiar distribution support for the view that the human and game trypanosomes are one and the same parasite, and that man is extraordinarily resistant to infection by it

While the normal incidence of the infection is as mentioned above, exacerbations have from time to time been observed in localized areas of the Valley, but these, after the lapse of a few years, have always ended spontaneously The most pronounced instance of an exacerbation was the one which started early in 1918 in the northern end of the Lundazi sub-district In May, 1920, the Native Commissioner reported that since the commencement of this outbreak 131 deaths had occurred from what appeared to be sleeping sickness amongst an adult population estimated at 1 455 Kinghorn notes that plague appeared in this district at the end of 1917 and was not stamped out until 1919 This coincidence was probably quite fortuitous except that many villages were burned and the natives forced to build temporary quarters in the bush, which, of course, brought them into closer and more continuous contact with fly than is usually the case In a table the author gives the results of an examination of the natives in this district in the years 1913, and 1920 to 1925 In 1913, 0 06 per cent were found to be infected , in 1920, 0 43 per cent , in 1921, 0·32 per cent , and during the succeeding three years the number gradually fell to 0 04 per cent Kinghorn is of the opinion that epidemics of this sort are usually due to the superimposition of a man-fly-man cycle of transmission of the parasite on the more ordinary game-fly-man cycle, and that the occurrence of this is often hastened by some change in the habits of the natives

The next section of the report gives an account of the disease in human beings The incubation period is short, probably between one and two weeks At first the only symptom is fever with its concomitants This is followed by adenitis, progressive emaciation, oedemata of the extremities and face, protuberant abdomen, diarrhoea, anaemia, tremors, inco-ordination, mental hebetude, and somnolence deepening into coma. In untreated cases the average duration of the disease is from three to six months. Only occasionally may a case live from 10 to 12 months, and only once in Kinghorn's experience has that period been exceeded.

Evidence is produced to show that the disease is decidedly one of adolescence and adult life. The author has never seen a case in a young child, and only comparatively rarely under the age of about 15.

In the following section further information is given regarding the fate of 38 cases treated by KLEINE and FISCHER with "Bayer 205." Only five cases were alive in August, 1924; these were examined by Kinghorn at that time and again in the spring of the present year. All appeared to be in perfect health and showed no parasites in the blood stream. Kinghorn disagrees with the claim of KLEINE's Commission that "if in districts infected with sleeping sickness all suspected natives receive treatment . . . the source of infection for the tsetses will gradually disappear and in time the disease must die." This claim is based on the assumption that man is the only reservoir of the virus and that the game is negligible—an assumption which Kinghorn cannot admit.

With reference to prophylaxis the author states it must be recognized that no assistance can be expected from the natives for any measure designed either to combat a specific infected area or generally to improve the sanitation of the villages. Very few Europeans travel in the Valley now, and the natives have remained under their ancient tribal beliefs and treat European ideas of the etiology of diseases and the methods to be adopted in treating them with undoubted, if unexpressed, disbelief. The general attitude of the native is one of passive resistance which can only be overcome by a certain amount of compulsion, and when force has to be employed results are usually unsatisfactory. With the increase of education, this attitude may be modified, but it will necessarily be a very slow process. Something might be done by arrangement with the various missions to have schools in the Valley, and by giving the teachers instruction in the essential facts of the etiology of sleeping sickness and other infections.

Sleeping sickness ordinarily is one of the less important causes of death in the Valley, and Kinghorn doubts whether it is incumbent on the Government to provide special facilities for treatment beyond those which already exist in the various hospitals. It is advisable to keep on the statute book the sleeping sickness regulations, not with any idea of interfering with the natives, but chiefly for the power they confer of regulating the movements of Europeans.

W. Yorke.

BEVEN (J. Osmonde). **Trypanosomiasis in Kenya Colony. A Report on a Sleeping Sickness and Tsetse Fly Survey of the Nyanza Province.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Feb. 19. Vol. 18. No. 8. pp. 439–454. With 1 map in text.

The author describes the results of a survey for sleeping sickness made in 1921 of the north-eastern shores of Lake Victoria from the Uganda boundary to the Tanganyika boundary at Mwinene Bay, as well as of the principal rivers flowing into the lake between these limits.

Glossina palpalis was the common species throughout the country examined; *G. pallidipes* was found in two localities, viz., in the dry thorn bush along the south bank of the Kuja River some distance from the water and in similar country in Kasigunga; and *G. fusca* was met with in five places.

Cases of sleeping sickness were found in the following places: Usaki, 2; Karunga, 1; Kadem, 1; Kaniamkago, 1; Kabwoch, 1; Gwasi, 1; Karachonya, 41; Nyakach, 8; Kadimu, including Mageta Island, 45; Alego, 4; Asembo, 2.

The next section consists of notes on some of the locations visited; and the author then passes to a consideration of the spread of sleeping sickness. The disease, apart from single isolated cases, was found fairly widespread and increasing in four areas, viz.: the Miriu river, Homa Point, Mageta Island, and to a much lesser extent in Kadimu. In none of these does sitatunga occur. The paper closes with certain recommendations for dealing with the situation. W. Y.

SWYNNERTON (C. F. M.). **The Evidence as Regards the Game in the Outbreak of Human Trypanosomiasis near Mwanza.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Mar. 19 & May 21. Vol. 19. Nos. 1 & 2. pp. 70–80. [4 refs.]

This paper is a rejoinder to that of DAVEY (this *Bulletin*, Vol. 21, p. 748).

The following summary is given:—

"1 *Origin of the Outbreak*—No fresh light has been thrown on the origin of the outbreak The alternatives remain as they were in 1922, and it is at present not more probable that infection was derived from game than that it was introduced with a human infect The evidence available is to the effect that the outbreak, as an appreciable outbreak, is of recent occurrence

"2 *Method of Spread*—Cyclical infection appears likely to have been at play, but even here man is indicated as a probable infector of the fly

"3 *Game Distribution*—The position in 1922 was exactly as it was described by me at the time (1923, p 324), excepting that the arrow in my map, between Kilalo and Ngasamo, indicating a game movement and a good deal of game abundance, should, I find, have been extended unbrokenly to Mtukuza Observations made outside the area, or at a date when it has been to all intents and purposes a game reserve for 18 months, are irrelevant

"The position described in 1922 and the fact that it was preceded by very heavy slaughter of game were matters of observation and investigation, and the facts have been confirmed by others The belief that the oft-urged experiment in game destruction has been practically carried out in the area was a statement of opinion It may be correct or it may be mistaken

"4. *Source of Infections*—The importance of infected man as a source of infection of the fly has probably been very greatly under-estimated. Actual evidence against the game as a reservoir of Rhodesian sleeping sickness is still confined to the resemblance between the trypanosomes, and, as regards this theory, the laboratory analogy relied on by Dr DUKE. The game may be a reservoir, but, especially in view of TAUTE's experiments, that needs to be proved

"5. *Inference from Discoveries of T. rhodesiense Infection*—The mere fact of the occurrence of an outbreak is not 'A link in a chain of evidence that wherever game infected with the *brucei-type* of trypanosome, fly of the *morsitans* group and man are brought into sufficiently close contact' cases of human sleeping sickness will arise.

"Many outbreaks, perhaps most, possibly all, may be originated by infected human beings. The evidence must be closely sifted and the probabilities separately arrived at for every outbreak and case. There has been such continuous movement of people between infected and uninfected areas during and since the war, that it will be surprising if cases and outbreaks of *man*-introduced infection are not found to be ubiquitous.

"6. *Effect of the Measures Adopted.*—Most of the figures of sick for 1923 came from country which had been unsearched or in which control was otherwise incomplete in 1922.

"The Sultanates most fully searched and brought under control in 1922 showed the figures 2, 0 and 0 in 1923. This, it is believed by those best in a position to judge, was a true indicant of the success of the measures taken

"7. *The Effect of the Prevalence of the 'One-Family' Bush Village.*—Owing to the small size of such villages the feral conditions essential to the presence of tsetse in numbers exist right up to them and to their very small fields, and the inhabitants, sick and well, are attended by the flies in all their occupations. A maximum number of flies are thus laid open to infection, and a maximum number of healthy people. Thus, with village to village intercourse also considerable, epidemic is likely to be facilitated by a prevalence of the small village."

W. Y.

KELLERSBERGER (E. R.). **Note on a Case of Sleeping Sickness in a Child Three Weeks Old.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Mar. 19 & May 21. Vol. 19. Nos. 1 & 2. pp. 81–83.

The author, in Katanga, was called on September 25, 1924, to see a baby boy 10 days old with high fever and a very large spleen. A diagnosis of malaria was made, although the blood was negative, and an injection of quinine was given. On October 9 he again saw the child and examination of thick blood films revealed the presence of numerous trypanosomes. The mother was then examined and some soft glands found; these on puncture showed trypanosomes.

The mode of infection of the child is considered, and apparently there were three possibilities, viz., intrauterine infection, through the milk, and through mosquito bites. It was impossible to reach any definite conclusion which of these three alternatives was responsible for the infection.

W. Y.

WALRAVENS (P.). Traitement de la maladie du sommeil. [**Treatment of Sleeping Sickness.**]—*Bull. Soc. Path. Exot.* 1925. Apr. 8. Vol. 18. No. 4. pp. 312–316.

Although there is evidence that "Bayer 205" is of considerable value in the treatment of early cases of sleeping sickness, the results obtained in advanced cases of the disease, and especially those exhibiting nervous signs, are much less satisfactory. In view of this the author has investigated the effect of "Bayer 205" when combined with atoxyl, emetic or neosalvarsan in advanced cases. The exact method of treatment is described; lumbar puncture was made before treatment, and one month and four months, respectively, after treatment: the results are set forth in a table.

The conclusions are:—

1. Of six patients treated with atoxyl-Bayer one appeared to be cured, one improved but could not be followed up, one was probably

cured, one improved but should be observed further, and in two the disease did not seem to be arrested

2 Of five patients treated with atoxyl emetic-Bayer, two in whom the spinal fluid was hardly changed before treatment were probably cured, one in whom the spinal fluid was markedly changed appeared to be cured, and one with very pronounced changes in the spinal fluid improved at first, but relapsed later

3 Of three patients treated with Bayer–emetic, and in whom the spinal fluid showed moderate changes, one got worse, but two are probably cured

4 Of two patients treated with Bayer–neosalvarsan, one appeared to be cured and the other got worse

5 Of three patients treated with Bayer alone—one with normal spinal fluid, and two with a spinal fluid slightly altered—all appeared to be cured

Summarizing these results, it appears that the combination of antimony with " Bayer 205," with or without the addition of arsenic, has the best action on the nervous stage of human trypanosomiasis The persistence of the peripheral sterilization is noted

W Y

TANON (L) & JAMOT (E) Essais de traitement de la maladie du sommeil au Cameroun par le ' Bayer 205 " [**Treatment of Sleeping Sickness in Cameroon by " Bayer 205."**]—*Rev Med et Hyg Trop* 1925 May–June Vol 17 No 3 pp 97–115

The therapeutic value of " Bayer 205 " was tested in 39 cases of sleeping sickness in Cameroon , the patients were kept under daily observation for three months after treatment and subsequently less regularly up to 9 months The cases were divided into four groups —

1 Those presenting all the signs of the first period, with a normal spinal fluid

2 Those with a slight degree of meningeal disturbance indicated by a little lymphocytosis without trypanosomes—commencement of the second stage

3 Those with marked lymphocytosis with or without parasites—second stage

4 Those exhibiting emaciation, cachexia, somnolence and nervous troubles—third stage

Details are given of all the cases treated

Summarizing the results, it was found that ' Bayer 205 ' was a good trypanocide, but that it was attended with the danger of albuminuria It is not superior to atoxyl, which causes the disappearance of trypanosomes within an equal time The drug has an irritating effect on the renal epithelium and the albuminuria which it produces is not always transient , it is accompanied by definite histological changes in the renal epithelium and may lead to anuria

The authors ask whether, even when the albuminuria disappears, the kidneys may not be left in a damaged state and the condition finally terminate in a nephritis They do not, however, consider that " Bayer 205 " should be rejected as a remedy for *T gambiense* infections, but insist that it must be used with caution

With regard to the question whether the drug has a curative action, the authors state that it would be premature to offer an opinion , sleeping sickness develops slowly and one can only speak definitely regarding the value of any drug after a lapse of two or three years But from the information available they believe that it has not the curative action which is claimed for it, because it has no effect on the principal lesion, that of the meninges. The meningeal reaction is not influenced by the drug, and the authors adhere to the principle that a drug can only be considered capable of curing sleeping sickness when it causes the meningeal reaction to disappear. In the authors' series of cases all those who were in the first stage of the disease can be considered to be cured, and for the purpose of treating such cases atoxyl is a most suitable drug. "Bayer 205," has, however, one great advantage, and that is that it is valuable in *T. rhodesiense* infections.

W. Y.

FISCHER (W.). Die Schlafkrankheit auf Fernando Poo. Erfahrungen mit der Germaninbehandlung. [**Sleeping Sickness in Fernando Po. Treatment by Germanin.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. June 1. Vol. 29. No. 6. pp. 255–264. [4 refs.].

The author visited the island of Fernando Po and treated a number of cases of sleeping sickness there between November, 1923, and March, 1924.

Sleeping sickness in this Island was first studied in 1909; it is now widely spread and *Glossina palpalis* is ubiquitous. In a short time Fischer found 239 native cases by blood examination; in addition almost an equal number of cases diagnosed clinically were treated, but in the absence of a microscopic diagnosis these are omitted from the statistics. Eight white patients—1 German, 2 Spaniards, 4 Portuguese and 1 English woman—were also treated.

A detailed account of the disease and its treatment is given in the case of two of the Europeans. Of the 247 cases diagnosed microscopically, 10 disappeared after the diagnosis had been made and were untreated, 21 had only a single injection, and 28 only 2 injections. Finally, 10 cases came for treatment only a few days before the author left and so cannot be included in considering the results. There thus remained 178 cases systematically treated. A few of these had been previously treated with arsenic, but the majority were untreated. The same plan was followed as in the Congo, viz., 1 gm. of Bayer intravenously on the 1st, 3rd and 10th or 13th days; in bad cases this course was repeated after a month's interval. In two cases in the third stage trypanosomes reappeared in the blood 33 days after the third injection, and in one case in the second stage 30 days after the third injection. In view of this and of the author's immediate departure the first three injections were then given on consecutive days. In view of the limited time the author spent in the Island, it is possible to give information regarding only a comparatively few cases. Details are given regarding 47 patients who received three injections and who had, at the time of Fischer's departure, remained free from trypanosomes for at least a month. Four patients in the third stage of the disease died. Five other patients relapsed between the 27th and 33rd days after the third injection.

In one patient (No. 107) the trypanosomes appeared to be resistant to the drug, as 8 days after the third injection the blood contained numerous parasites; these then disappeared for 6 days and again reappeared; two further injections caused them to disappear again, but only for 13 days. The treatment of young children proved very unsatisfactory, possibly because of the difficulty of finding the correct dose of the drug.

W. Y.

LLOYD (Ll.). **Report on the Treatment of Sleeping Sickness at the Tsetse Investigation Camp, Sherifuri.**—2 typed pp. 1925. Mar. 7. Sherifuri, via Kano.

Of 150 cases of sleeping sickness diagnosed at Sherifuri, N. Nigeria, 131 were treated with "Bayer 205." The routine treatment was a course of five injections each of 1 gm., the first three doses being given on alternate days and the last two at intervals of a week. Owing to the fact that the first two or three days usually produced a feeling of well-being, a number of the cases left before the course was completed. Efforts were made to get the natives to report the deaths of treated cases, and so far 15 deaths have occurred amongst the 131 treated. Of these, 11 had not completed the course, one had received 5, one 6, and one 7 doses of the drug. As the length of the treatment in the last three cases indicates, these were advanced cases. Lloyd points out that it must not be supposed that all these patients died of sleeping sickness, as there had been in that district during the previous year a heavy mortality from other diseases. Three cases reported a second time a year after the initial treatment. Lloyd believes that these were reinfections.

The best evidence of the efficacy of the drug is afforded by the history of the five cases which occurred among the Tsetse Investigation staff. Of these five, one is in perfect health 22 months after treatment and the others after 12 months; they have all been under constant medical observation.

Only one of the 131 appears to have been really resistant to the drug and to have shown no improvement; he was admitted in a very advanced stage, and after having received three doses of the drug died on the 7th day with parasites still in the blood.

Lloyd writes that the epidemic in Sherifuri appears to have died down. In 1923, 99 cases were reported; in 1924, 47 cases, and during the first two months of the present year only three cases. Although certain factors, such as thinning of the local population through causes other than disease, may have played their part, Lloyd considers that it is highly probable that the use of "Bayer 205" has helped very considerably to stem the epidemic.

[This seems to be the series of cases upon which HANINGTON reported (this *Bulletin*, Vol. 22, p. 533).]

W. Y.

i. RAWSON (P. H.). **Report on Cases of Trypanosomiasis treated with "Bayer 205" at Arua, West Nile, during December, 1923, and January, 1924.** [13 pp. foolscap. MS. dated July 8, 1924. Received from Colonial Office, July 8, 1925.]

ii. SCHOFIELD (A. T.). **Report on Treatment of Sleeping Sickness at C.M.S. Hospital, Toro, Uganda.** [6 pp. foolscap. MS. undated. Received from Colonial Office, July 8, 1925.]

i. The first report is that of Dr. P. H. Rawson, who, in June, 1924, travelled to East and West Madi to examine cases of sleeping sickness which had been treated with "Bayer 205" during December, 1923, and January, 1924. Details are given concerning 9 cases, all of which have apparently done well after from 5 to 7 injections of the drug.

ii. The second report is from Dr. Schofield, who deals with the treatment of certain cases of sleeping sickness at the C.M.S. Hospital, Toro.

Six cases were selected for treatment with "Bayer 205." Two of these were of a severe cerebral type, 2 were of the early cerebral type, and 2 were fairly early cases. All came from Katwe or the Semliki River area. Only one of the cases had received previous treatment. Trypanosomes were found in the blood in 5 of the cases and in the gland juice of the other. "Bayer 205" was administered as recommended by KLEINE. Routine examinations of the urine were made, but no albuminuria was found, nor were there any ocular symptoms. Blood examinations made after the first injections were negative in every case. The treatment took place in July and August, 1924, and in October and November of the same year all but the two severest cases were discharged with negative blood and completely free from every sign or symptom of the disease. The 2 severe cerebral cases were kept longer under observation and, as one of them had, in September, a slight return of drowsiness, they were given 3 further doses of "Bayer 205" at weekly intervals. On October 16, when the author went on safari, both patients were apparently quite well, and still gaining in weight, but three days later, without any premonitory symptoms, both became comatose and died within 24 hours.

W. Y.

FREUND (R.). Zum biologischen Nachweis von Bayer 205 im Organismus. [**The Biological Demonstration of "Bayer 205" in the Organism.**]—*Deut. Med. Woch.* 1925. May 22. Vol. 51. No. 21. pp. 861–862. [13 refs.]

Reference is made to the fact that "Bayer 205" has been proved to persist in the organism for prolonged periods and that its protective action is believed to be bound up with this phenomenon. DALE has, however, pointed out that the experiments believed to support this view did not exclude the possibility that the protective substance was in fact some product of reaction between the drug and the body cells. There appear to be two possibilities: first, a new trypanocidal body is formed by the reaction of the drug and the body cells; or, secondly, in response to the stimulation of the drug, the cells form a new substance which is entirely of cell origin and contains neither "Bayer 205," nor a derivative of it.

A number of experiments devised with the object of throwing light on these questions are described. It was found that mice which had received a preliminary dose of ·5 cc. of 1 in 2,000 sol. of "Bayer 205" were protected against a normal strain of nagana, but not against a "Bayer 205" resistant strain. Similar results were obtained with the use of "Bayer 205" rabbit serum in the treatment of mice infected respectively with a normal strain of nagana and a "Bayer 205" resistant strain.

These experiments showed that the trypanocidal action which the blood of animals injected with "Bayer 205" possesses for a prolonged period is of no value against a "Bayer 205" resistant strain; they are decidedly against the view that the prolonged protection afforded by an injection of "Bayer 205" is due to a new substance of cell origin, and favour the view that the drug itself remains for an exceptionally long period in the animal organism.

W. Y.

Freund (R.) Ueber die antimutative Wirkung des "Bayer 205." **[The Antimutative Action of "Bayer 205."]**—*Ztschr. f. Immunitatsf u Experim Therap* 1925 June 8 Vol 43 No. 3. pp 253-268 With 2 text figs [6 refs]

The following summary is given —

1 Mice infected with *T brucei* which have received a non trypanocidal dose of "Bayer 205" remain relapse free when subsequently treated with tartar emetic (direct antimutative action)

2 This action of 'Bayer 205" is specific, dependent on the dose, but is no simple addition action

3 This is supported by the fact that even in Germanin-free media (brought about by the transmission of the trypanosomes to normal mice) an (indirect) antimutative activity is observed

4 Through the influence of non-trypanocidal doses of Germanin the trypanosomes undergo a paralysis of their relapse forming capacity, in one instance this change survived through two passages

W Y.

Kligler (I J) & Weitzman (I) **The Mode of Action of "Bayer 205" on Trypanosomes.**—*Ann Trop Med & Parasit* 1925 July 16 Vol 19 No 2 pp 235-241 [11 refs]

The experiments described in this paper were devised with a view to investigating the effect of "Bayer 205" on trypanosomes *in vitro*, and to ascertaining whether there is any relationship between its effect *in vitro* and *in vivo* The author used a strain of *T evansi*, the parasites were exposed to the action of the drug *in vitro* and the effect on the organisms tested by their subsequent inoculation into animals

The following are the conclusions —

"The various experiments described above bring out two facts First that contrary to our previous belief that Bayer exerts little trypanocidal action *in vitro*, it appears that the drug has a marked effect on the cell, so that a dilution of 1 1 600 is sufficient to destroy the virulence of the organisms The other fact is that, in rabbits at least, the therapeutic, abortive and prophylactic doses are similar

"It is difficult to make comparisons between *in vitro* and *in vivo* effect because it is not possible to determine the amount of drug which remains in circulation The work of Mayer and Zeiss indicates that the drug is bound in the blood stream by the serum, and is thus retained for many weeks If the weight of the blood is accepted as approximately 1/15 the total body weight it is possible to make a rough estimate of the effective dilution of the drug in the circulation Our experiments show that doses of 0 005 gm per kilo or a dilution of 1 3 000 fails either to protect or cure an animal, while 0 01 gm per kilo, or a dilution of 1 1,500, is effective in a proportion of cases Even if we assume that only 50 per cent of the drug is bound in the serum, the effective doses *in vivo* correspond fairly well with those *in vitro* A still further correspondence is the fact that when small doses of the drug are given the trypanosomes disappear from the circulation only 16 to 18 hours after treatment

"The rational conclusion then is that the therapeutic property of Bayer '205' is due to a direct injury to the trypanosomes which renders them avirulent for the host, and thus readily destroyed and eliminated The difference observed in different hosts are probably due to the rate of elimination of the drug, or, in other words, to the residual concentration of the drug in the circulation"

W. Y.

KIANG (Tsin Sung). Ueber die Bildung spezifischer Antikörper durch die Behandlung mit " Bayer 205 " (" Germanin "). [**The Formation of Specific Antibodies in Treatment with " Bayer 205."**] —*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Oct. 15. Vol. 29. No. 10. pp. 572–588. [11 refs.]

In chronic trypanosome infections of rabbits the serum contains a substance which gives a Pfeiffer's reaction, *i.e.*, on injection with trypanosomes of the same strain as that with which the rabbit is infected into the peritoneal cavity of a mouse the parasites are disintegrated. The reaction is specific. *T. equiperdum* and *T. equinum* exhibit a reciprocal group reaction, but *T. brucei* is strongly specific.

On treatment with " Bayer 205 " antibody is formed in large amount, is active after considerable dilution, and is highly specific. This augmentation of activity is not observed at once, but only after an interval of 3 to 10 days, and lasts for 3 weeks to 3 months. Repeated treatment of rabbits with small doses of the drug has the same effect.

The trypanocidal appearances manifest themselves in various degrees.

1. The light form.—First the motility of the parasite is affected, the parasite stains badly, pigment appears at both ends of the nucleus, vacuolation is seen, the flagellum becomes separated from the body and, finally, the whole shape of the parasite changes, and it appears to swell. These appearances can after some time undergo a retrograde process, and then numerous division forms appear.

2. The stronger form.—Motility is changed, the parasites stain badly, and their outline is barely visible. Vacuolation is marked and the change in form is very great ; the parasites shrink and become ring-formed.

3. The strongest form.—Motility soon ceases ; in stained preparations only a few highly vacuolated parasites are seen. In half an hour only free nuclei, blepharoplasts and flagella are visible.

W. Y.

LAIGRET (J.) & BLANCHARD (M.). Premiers essais du produit 309 dans quelques trypanosomiases expérimentales et en trypanosomiase humaine. [**Trial of " 309 " in Experimental and in Human Trypanosomiasis.**]—*Bull. Soc. Path. Exot.* 1925. May 13. Vol. 18. No. 5. pp. 410–420. [2 refs.]

The authors have examined the therapeutic action of the product " 309 " prepared by FOURNEAU, TRÉFOUEL and VALLÉE, which is believed to be identical with " Bayer 205." The drug was first tried on guineapigs infected with *T. pecaudi* and *T. gambiense,* and it was found to exert a trypanocidal action exactly comparable with that of " Bayer 205." A dose of 0·05 gm. per kilo sufficed to cure guineapigs if given within a month of infection, and 0·08 gm. given later produced the same result.

In the treatment of human trypanosomiasis it is stated that " 309," like " Bayer 205," gave results definitely inferior to those of arsenicals. Peripheral sterilization was easily obtained, but was of short duration, and provoked albuminuria in most of the cases.

The drug exerted a prophylactic action similar to that of " Bayer 205," either when given before infection or when used as a curative agent ; in each case the animals were protected for a period against further infection. It is surmised that " 309 " will prove of considerable service in protecting animals destined for the Brazzaville slaughter house and workmen on the railway. It is as yet, however, too early to write with certainty regarding the value of the drug as a prophylactic in man, as one must know more regarding its action on the kidneys.

W. Y.

Blanchard & Laigret. Premiers résultats du traitement de la maladie du sommeil par le tryparsamide à l'Institut Pasteur de Brazzaville. [**First Results of the Treatment of Sleeping Sickness by Tryparsamide at the Pasteur Institute, Brazzaville.**]—*Ann. de Méd. et de Pharm. Colon.* 1925. Jan.–Feb.–Mar.–Apr. Vol. 23. No. 1. pp. 131–134.

Thirty patients have been put on treatment, but many of them have not yet completed their course: the first results, which are recorded in this note, relate to 16 cases, the observation of which has not, however, exceeded one month.

With regard to the patients in the first stage of the disease, the authors write that the results given by atoxyl are so excellent that the only interest a new drug has is in its effect on the second stage. Consequently, only two patients in this category were treated with tryparsamide, and the drug was found to have a powerfully sterilizing action on the peripheral circulation.

Fourteen patients in the second stage of the disease were treated. Four died, but these were practically moribund when treated; in three the condition was aggravated, and in three very much ameliorated with disappearance of the somnolence; in four cases the condition was good before treatment.

With regard to the spinal fluid it was found that the trypanosomes disappeared, the lymphocytosis diminished, but the effect on the albumose content was inconstant.

In a table are given details of the dose of the drug administered and the result of examination of the spinal fluid before and after treatment in the case of each of the 14 patients in the second stage.

W. Y.

Chesterman (Clement C.). **The Efficacy of Tryparsamide in the Cure of African Sleeping Sickness.**—*Lancet.* 1925. Nov. 7. pp. 965–967. With 1 text fig. [10 refs.]

Before discussing the results obtained in the treatment of sleeping sickness by tryparsamide, the author briefly reviews the value and limitations of the main drugs and treatments in vogue up to the present. He writes as follows:—

"To recapitulate, therefore, there are a variety of drugs which are capable of effecting and maintaining sterilisation of the peripheral circulation for varying periods. Sterilisation is effected most quickly by tartar emetic, less so by atoxyl, and least quickly by Bayer '205,' but the reverse order holds good for the maintenance of sterilisation when once effected. This brings out the real value of 'Bayer' to the sanitarian concerned with the removal of infectivity. None of these drugs can, however, be relied upon to cure a case which has shown definite nervous involvement."

As regards tryparsamide, Chesterman records that all of 5 cases with unaltered spinal fluid were well and apparently cured 3½ months to a year after treatment. Turning to those cases which at the time of treatment exhibited altered spinal fluid, Chesterman notes that the latest information regarding his series of 40 such cases treated by tryparsamide (this *Bulletin*, Vol. 20, p. 694; Vol. 22, p. 139) shows that one further case (No. 146, Mbalika) has died, and thus the figures for those still alive after 2½ to 3½ years falls to 37·8 per cent. Stress is laid on the fact that these cases were the worst that could be found, averaging 630 cells per cmm. in the cerebrospinal fluid.

Unfortunately, there are a number of cases which do not react so favourably to tryparsamide, so that in claiming that the drug can cure, we cannot claim that it is a cure of all cases. The author believes that this is due to different degrees of immunity exhibited by various individuals.

Writing on suggestions for treatment Chesterman says the best control of treatment is the examination of the cerebrospinal fluid for cells or albumin. The latter is simply effected by precipitation of the albumin in 1 or 2 cc. by trichloracetic acid (33 per cent.) and comparison of the opacity with standardized bacterial emulsion.

The drug should never be given in doses exceeding 4 gm. The maximum tolerated dose must be arrived at gradually in advanced cases, but must be maintained whenever possible for at least 10 injections, which may be either weekly or fortnightly. A short course should be given whenever possible 6 months after the first, the cessation of which is to be guided by progress and the condition of the cerebrospinal fluid. It must be remembered, however, that the cerebrospinal fluid will progress towards the normal limits subsequent to the cessation of treatment if that has been thorough; an excess of cells, even up to 50 per cmm., may have entirely disappeared after three months.

W. Y.

FAIRBROTHER (Thomas H.), MASON (Frederick A.), PERKIN (William H.) & RENSHAW (Arnold). **The Preparation of Certain Substituted Ureas and their Use in the Treatment of Trypanosomiasis.**—*Jl. Path. & Bact.* 1925. July. Vol. 28. No. 3. pp. 515–521.

The following are the conclusions :—

"1. There is definite evidence of trypanocidal properties in the substituted ureas, which are entirely dependent on the configuration of the molecule and on the groups which go to form the molecule.

"2. The only one of the three ureas studied which showed marked trypanocidal power was the one (No. 3) with the formula suggested by Fourneau, viz., the urea from meta-aminobenzoyl para-methyl meta-aminobenzoyl amino-naphthalene tri-sulphonate 4 : 6 : 8.

"3. We have shown that this power is not due to the ending of the urea chain in K. acid (the "acide B" of Fourneau), because urea 2, which contains two molecules of K, acid was inactive. This leads to the conclusion that the activity is due to the variation and arrangement of the benzoyl and toluyl residue in the urea chains.

"4. The trypanocidal action of urea 3 *in vitro* requires further investigation, since in one case a delayed infection occurred.

"5. The tolerated dose is 10 mgrm. per 20 grm. mouse, whereas the curative dose has been as low as 0·05 mgrm. a $\frac{C}{T}$ ratio of $\frac{200}{1}$ being obtained."

W. Y.

LEUPOLD (Frida) Die Bedeutung der Blepharoplasten als Angriffspunkt chemotherapeutischer Substanzen **[The Significance of the Blepharoplast as the Point of Attack of Chemotherapeutic Substances.]**—*Ztschr f Hyg u Infektionskr* 1925 June 6. Vol. 104 No 4 pp 641–647.

Arsenic-resistant trypanosomes cannot be made blepharoplastless by trypaflavin as can normal strains, as can easily be seen in stained preparations It is possible that the chromatin substance of the blepharoplast is so changed by arsenicals that its affinity for acridin dyes is lost and it becomes no longer susceptible to the action of trypaflavin

Trypanblue-fast trypanosome strains behave in a similar manner, so that the blepharoplast must also serve as the point of attack of dyes of the benzidine series Strains resistant to tartar emetic and to "Bayer 205" are just as susceptible to the action of trypaflavin as are normal strains

A complete loss of the blepharoplast through the action of trypaflavin need not, however, be assumed, since it is still possible to demonstrate in trypanosome strains, the blepharoplast of which is no longer stainable, a chemically active function of the blepharoplast which makes the occurrence of certain residual affinities probable A trypanosome strain resistant to the fuchsin dye tryparosan and blepharoplastless is destroyed by trypaflavin Moreover, it is possible to make resistant to arsacetin this fuchsin blepharoplastless strain, which is susceptible to trypaflavin, although arsacetin has been previously shown to have an affinity for the blepharoplast This strain doubly resistant to tryparosan and arsacetin was now found to be resistant to trypaflavin For the explanation of this two hypotheses are possible Firstly, that the chemical affinity of the chromatin substance of the blepharoplast remains, and its staining capacity alone is lost, secondly, that the chromatin substance of the nucleus is also concerned in the fixation of arsenicals

The observation that a "Bayer 205" resistant strain behaves towards substances which have an affinity for the blepharoplast in the same manner as normal strains is at first sight apparently not in agreement with the previous observation that "Bayer 205" and arsenicals have the same point of attack This contradiction is, however, at once explained if one assumes that the dyes having a blepharoplast affinity have also one for the nucleus

W Y

KROÓ (A) Beitrag zur Immunbiologie der Trypanosomen Ueber Stammeinheit und Arteinheit des *Trypanosoma brucei* **[The Immunity Relations of the Trypanosomes. Unity in Strain and Species of** *T brucei* **]**—*Ztschr f Hyg u Infektionskr.* 1925 Aug 19. Vol 105 No 1. pp 247–253

The author discusses briefly the various serological tests which have from time to time been advocated—particularly by the French school—as useful in the separation of trypanosome species In his own work he used 3 strains of *T brucei*, viz, strain "Prowazek," from the Robert Koch Institute, Berlin; strain "Ferox" from the Georg-Speyer-Haus, Frankfurt a M, and a strain from the Pasteur Institute, Paris Twenty-four mice were inoculated with the Prowazek strain and on the third day, when their blood contained about 10 to 20 parasites per microscope field, they were treated with ·2 cc. per 20 gm. body-weight of 1 in 1,000 solution of potassium antimony tartrate. The next day the blood was negative in every case, and previous experiments had shown that it would remain so for at least 7 days. On the day the blood became negative (the fourth) 8 of the mice were inoculated with one of each of the above three strains. It was found that, whereas those inoculated with strain Ferox and the Pasteur Institute strain all became infected and had died by the eighth day, those re-inoculated with strain Prowazek had not shown parasites in the blood within this period. Similarly, experiments performed on mice infected with each of the other strains gave comparable results.

From this work the author concludes that such reactions are strain-specific and consequently unsuitable for differentiation of species.

W. Y.

NEUMARK (Eugen) & POGORSCHELSKY (Herbert). Das Vorkommen trypanocider Substanzen bei Säuglingen. **[The Occurrence of Trypanocidal Substances in Sucklings.]**—*Klin. Woch.* 1925. Sept. 3. Vol. 4. No. 36. pp. 1724–1725.

The conclusions are the following :—

1. Healthy sucklings have no detectable amount of trypanocidal substance in the serum during the first weeks of life.

2. As age increases the trypanocidal substances appear and are well developed at the end of three months.

3. Any infection is sufficient to cause a decrease of trypanocidal substance.

4. "Dysergitic" children (of ABEL) exhibit a lack of trypanocidal substance.

5. In several cases of pronounced Barlow's disease and premonitory haemorrhages, the lack of trypanocidal substances was found to be due to accompanying, or previous, infections.

W. Y.

LEICHTENTRITT (B.). Die Bedeutung der Trypanociden Serumkörper in der Kinderheilkunde. **[The Significance of the Trypanocidal Serum Substance in Child Therapeutics.]**—*Klin. Woch.* 1925. Oct. 1. Vol. 4. No. 40. pp. 1899–1905. With 5 text figs.

The serum of healthy human beings injected into a mouse stimulates the reticulo-endothelium to produce protective bodies and the mouse survives trypanosome infection. If the same serum is injected into a mouse the reticulo-endothelium of which is blocked through india-ink, serum, or vaccines, so that through exhaustion or blockage the protective substance is no longer formed, the animal speedily dies of the infection. In a similar manner the mouse dies if an inactive serum is injected. This is the case in icterus, as the reticulo-endothelium does not become attached to the defence-producing substance. An inactive serum can result from various causes in the human organism. In icterus neonatorum the trypanocidal substances are only feebly present. In severe defects due to bad dietary and, above all, keratomalacia resulting from lack of vitamins there is a disappearance of the substance. This defect is due to specific malnutrition, to formation of toxins, or to the formation of certain intermediate products of metabolism.

W. Y.

MUNTER (Friedrich). Die klinische Bewertung der trypanociden Funktion der Leber. [**The Clinical Assessment of the Trypanocidal Function of the Liver.**]—*Klin. Woch.* 1925. Oct. 8. Vol. 4. No. 41. p. 1967.

The following summary is given :—

1. Normal serum in doses of ·2 cc. per 20 gm. of body weight always cures mice infected with trypanosomes, and frequently in doses of ·15 cc., and even ·1 cc. has a distinctly beneficial effect.
2. In a case of liver coma the trypanocidal power of the serum was so reduced that 1 cc. was inactive.
3. In the cases of diffuse parenchymatous degeneration of the liver investigated by the author, the diminution of the trypanocidal power of the serum was exactly parallel to the severity of the disease as judged by clinical and other functional tests.
4. In cases of parenchymatous degeneration which does not affect in the same degree all portions of the liver, a definite decrease in the trypanocidal activity of the serum proceeds *pari passu* with the partial degeneration.
5. The presence or absence of icterus has no influence on the trypanocidal power of the liver.
6. The method has in the author's experience a quantitative value, and permits a judgment of the degree of parenchymatous degeneration of the liver.

W. Y.

LAVIER (G.). Infections héréditaires par les parasites animaux. [**Inherited Parasitic Infections.**]—*Ann. Parasit. Humaine et Comparée.* 1925. July. Vol. 3. No. 3. pp. 306–324. [87 refs.]

This is already a summarized statement of the record, and cannot be further condensed. A bibliography is appended.

The author includes an abstract of his own observations of litters of guineapigs from mothers experimentally infected with different species of trypanosomes (*T. rhodesiense, evansi, pecaudi, marocanum, equinum*). In not one of 7 experiments was any inherited infection observed, but the mortality in the litters was great, and the foetal liver usually was a little paler and more fatty than in the normal guineapig foetus. In one instance the surviving individual of the litter of a mother infected with *T. evansi* was inoculated with an attenuated strain of *T. evansi*, and its blood (tested on mice) did not become virulent; this might suggest an inherited immunity.

A. Alcock.

CAMPOS (Ernesto de Souza). Sur la paralysie des animaux (chien, souris), infectés expérimentalement avec les cultures de *Trypanosoma cruzi.* [**Paralysis of Dogs and Mice infected Experimentally with Cultures of** *T. cruzi.*]—*C.R. Soc. Biol.* 1925. June 12. Vol. 93. No. 20. pp. 40–42. [2 refs.]

In a previous note [this *Bulletin*, Vol. 22, p. 134] the author has given a clinical account of the nervous signs exhibited by dogs infected with *T. cruzi.* On examination of the spinal cord, disseminated inflammatory foci were found in the grey and white matter and arranged in a definite fashion; in some of these foci numerous aflagellar forms of the trypanosomes were present. Similar lesions were noted in dogs infected with a strain of parasites which had been passed through a number of guineapigs, although these animals do not themselves develop paralysis. In view of this fact, the author has enquired whether the elective action of the parasites would be conserved when they had been cultivated on artificial media. The trypanosomes were cultivated on blood agar and transplanted every 8–15 days ; after 23 subcultures the growths always showed both trypanosomal and crithidial forms. Dogs inoculated from the 18th to 23rd subcultures always developed nervous signs, showing that the neurotropic activities of the parasites had been preserved intact. Sections of the spinal cord showed numerous patches of infiltration and of neuroglia proliferation, sometimes with leishmania forms of the parasite.

W. Y.

VILLELA (E.) & TORRES (C. Magarinos). Lésions histopathologiques dans la paralysie expérimentale à *Schizotrypanum cruzi* chez le chien. Nature des cellules contenant le parasite dans le système nerveux central. **[Histological Lesions in *S. cruzi* Paralysis in Dogs. Nature of the Parasite-containing Cells in the Central Nervous System.]**—*C.R. Soc. Biol.* 1925. June 19. Vol. 93. No. 21. pp. 133–135.

The material was obtained from a series of 40 dogs inoculated with a strain of *T. cruzi* isolated from *Tatus novemcinctus*, which produced paralysis in almost all the animals within a month.

The central nervous system of the paralysed animals exhibited small inflammatory foci in constant relationship with the intracephalic capillaries and pre-capillaries: they were distributed indifferently in the white and grey matter, and were rarer in the cerebellum than elsewhere. The foci were formed of macrophages, some of which had evidently emigrated from the vessels, but others—the more numerous—were derived probably from the regional neuroglia ; the disintegration of the nervous tissue, the formation of numerous cells, and finally sclerosis, were the successive steps in the evolution of the foci ; leishmania-forms of *T. cruzi* were frequently met with. The blood-vessels showed an infiltration of the adventitia. Other histological details are given.

W. Y.

i. CARPENTER (G. D. Hale). **The Biology of Sleeping Sickness.**—*Kenya Med. Jl.* 1925. May, June & July. Vol. 2. Nos. 2, 3 & 4. pp. 35–41 ; 65–74 ; 96–103.

ii. KRAUSE (D. M.). **[Tryposafrol in Trypanosomiasis.]**—Sonderdruck aus dem *Deutschen Kolonialkongress.* 1924. 1 p.

iii. GIEMSA (G.). Ueber die Wirkung von Chinin und Chininderivaten auf Naganatrypanosomen. **[The Action of Quinine and Quinine Derivatives on Nagana Trypanosomes.]**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Oct. 15. Vol. 29. No. 10. pp. 479–485. With 2 text figs. [31 refs.]

i. These three articles contain an interesting review of the present state of knowledge on sleeping sickness mainly as it concerns Uganda.

ii. A plea for testing the value of tryposafrol in human trypanosomiasis in the same careful and thorough manner in which "Bayer 205" is being examined.

iii. This paper is of a chemical nature and should be consulted in the original by those interested.

W. Y.

BLACKWATER FEVER.

STEPHENS (J. W. W.). **Blackwater Fever.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 121–128. [United Fruit Company, Boston, Mass.]

The author states that he has thought it best to avoid discussing the pros and cons of the very numerous views that have been expressed from the time of TOMASELLI, and to limit himself to an attempt to place the facts of the matter before his readers.

After a brief discussion of the definition of the disease, the author mentions the following interesting points :—

1. Blackwater may occur in a European arriving for the first time in the Tropics as early as six weeks after his arrival.

2. It may occur as late as a year after he has left the Tropics.

3. Second attacks (or more than two) occurred, according to DEEKS and JAMES, in about 5 per cent. of the cases in Panama. The figure for Nigeria is about 20 per cent.

4. Occurrence of two or more attacks, in one patient, in the Tropics is not very uncommon. Thirteen is the largest number he has found recorded, and these occurred in France, during the course of a year, in a patient who had returned from Senegal, West Africa.

5. Recurrences while the patient is in the hospital are a peculiar and puzzling phenomenon. About 10 per cent., perhaps, expresses the frequency. The interval between the first attack and the recurrence may be as long as twelve days ; or often, where the occurrences are numerous, only a few hours. Eleven is the greatest number of recurrences found recorded, the total duration of the attacks being 643½ hours.

6. Post-haemoglobinuric fever. An obscure condition, apparently not uncommon, of a fever, sometimes severe, lasting many days after the haemoglobinuria ceases. He has no figure for the frequency.

Referring to the malaria factor, Stephens believes that the following facts are approximately correct :—

Malarial parasites are found in 75 per cent. of the cases on the day before the onset, in 50 per cent. of cases on the day of the onset, and in 20 per cent. of cases on the day after the onset. The evidence as regards spleen puncture is conflicting, BARRATT and YORKE failing to find parasites in six cases, whilst CHRISTOPHERS and BENTLEY found them in four of five cases. In 39 post-mortems in which definite statements are made, pigment or parasites were present in 32. With regard to the species of parasite, the author lays down that malignant tertian parasites occur in blackwater in a proportion comparable to that found in malaria cases in the blackwater area. There are apparently only seven records of the quartan parasite in blackwater fever in the whole of the literature.

It is stated that it is certain that quinine can produce haemoglobinuria, and two typical cases (one of KOCH'S and one of LOVELACE'S) are mentioned.

Reference is next made to the condition of the blood and urine in blackwater fever and a short account of the pathology is given. Discussing the question, " What is the essential cause of the blood destruction in blackwater?" Stephens refers to the fact that all attempts to demonstrate haemolysin in malaria or blackwater have failed, but he argues that it does not follow that the haemolysin does not exist, for the simple reason that when once haemolysin is injected into an animal, we can no longer detect that haemolysin, except by its lethal result. He considers that until the presence of a haemolysin can be negatived by good evidence, we may adopt this as a provisional hypothesis.

W. Yorke.

DEEKS (W. E.). **The Aetiology of Haemoglobinuric Fever.**—*Jl. Trop. Med. & Hyg.* 1925. Mar. 2. Vol. 28. No. 5. pp. 101–102.

Few problems in tropical medicine have caused more controversy than the aetiology of blackwater fever. Three theories have been advanced in explanation:—

(1) That it is a symptom-complex of a malarial infection.
(2) That it is caused by a specific organism which occurs in localities where malaria is present.
(3) That the administration of quinine alone is responsible for precipitating an attack.

Most authorities now believe that blackwater fever is associated in some way with a malaria infection and that *P. falciparum* is chiefly, if not altogether, incriminated. If this hypothesis be correct, the question naturally arises how haemolysis occurs in a malaria infection. After referring to BORDET's discovery that defibrinated rabbit's blood, when injected into a guineapig, results in the production of a haemolysin, Deeks goes on to state that we have reason to believe that the haemoglobin of the red cells consumed by the malaria parasite during feeding will develop haemolytic agents in its body substance similar to those which are developed in the guineapig's blood after injection of rabbit's red cells. In other words, it can be logically inferred that each malaria parasite develops a haemolytic property. Not only are red cells destroyed in malaria, but the colour index of the remaining individual red cells is lowered to a considerable degree, and it is reasonable to believe that this is due to a haemolytic agent. The author sees an analogy in hookworm infection where it is obvious that the small amount of blood consumed daily by several hundred worms will not account for the severe anaemia observed in these cases.

Deeks calculates that in a severe malaria infection where 20 per cent. of the red cells are invaded there is approximately 23·3 cubic inches of malarial protoplasmic material, and he considers that this would undoubtedly be capable of producing an enormous amount of haemolysin in the human blood and in response to its action a large amount of antihaemolytic substance. Any of the depressing agencies which are considered as aetiological factors and which might interfere with the development of antihaemolytic bodies would permit extensive haemolysis to ensue in such quantities that the liver and spleen would be unable to deal with the liberated haemoglobin, and haemoglobinaemia followed by haemoglobinuria would result. In paroxysmal haemoglobinurias following quinine—which destroys large numbers of trophozoites—so much haemolysin is suddenly liberated that the antihaemolytic substance is unable to neutralize it and haemoglobinuria results. If this hypothesis be correct, it affords a reasonable explanation why, in the treatment of post-haemoglobinuric fever, small doses of quinine should be given at first, so as not to destroy too many parasites at once and thus precipitate another attack.

W. Y.

HEWETSON (W. M.). **The Aetiology of Blackwater Fever.**—*Jl. Trop. Med. & Hyg.* 1924. Dec. 15. Vol. 27. No. 24. pp. 333–336; & 1925. Feb. 16 & Mar. 2. Vol. 28. Nos. 4 & 5. pp. 88–92; 105–110. [28 refs.]

In this series of papers the author puts forward the hypothesis that there is some relation between light and the development of blackwater. Such connection is not of a simple nature, and is associated with the occurrence of a morbid condition which, by its peculiarities of association, must be malaria. It is suggested that the haemolysis which constitutes blackwater fever is due to the presence of an optical sensitizer, probably one of the porphyrins which is developed under certain conditions, causing lowered hepatic activity in the course of the active stages of malarial blood destruction. [These papers are of a somewhat special nature, and do not lend themselves to summarizing; they should be consulted in the original by those interested.]

W. Y.

i. STERN (E.). Das Schwarzwasserfieber in Palästina. Klinische Beobachtungen in den letzten 40 Jahren. [**Blackwater Fever in Palestine. Clinical Observations during the Last Forty Years.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. June 1. Vol. 29. No. 6. pp. 264–283. [4 refs.]

ii. ——. Nachtrag zu meiner Arbeit "Ueber das Schwarzwasserfieber in Palästina." [**Postscript.**]—*Ibid.* Aug 1. No. 8. pp. 400–401.

i. It is only during the last 40 years, since the re-colonization of Palestine by the Jews, that it has been possible to make any accurate study of the occurrence of blackwater fever. The disease is found chiefly in three regions, viz.: the low-lying coast region from Acre in the north to Gaza in the south, the Israel plain, and the valley of the Jordan. In the higher regions cases were but rarely encountered. A lengthy historical account of the disease in Palestine is given.

The author was unable to satisfy himself that the disease occurred more commonly at any particular period of the year; it was met with in both sexes, but more commonly in males than in females, and only occasionally among young children or old persons. At least 85 per cent. of the cases occurred amongst immigrants; severe paludism was often seen among the native Arabs, but blackwater fever practically never. The author believes that in Palestine a certain degree of immunity to malaria, and especially insusceptibility to blackwater fever, has arisen in the course of generations, and he cites certain observations which he believes support this hypothesis.

In Palestine, as elsewhere, the majority of cases of blackwater fever occurred among persons with long-standing malaria, but the author saw a number of patients in whom there had been no definite malaria previously, but who had suddenly felt unwell, had taken a little quinine and then gone to the doctor who found the blood negative; the next day a slight attack of blackwater fever developed. Repeated attacks of the disease often occurred in the same individual; sometimes there

were two or three attacks within a year, but at other times there was an interval of 3 to 5 years between the first and second attacks, and then the second attack was often very severe and even fatal. The paper closes with an account of the symptomatology, aetiology, diagnosis, prognosis, treatment, and prophylaxis of the complaint.

ii. In this note the author expresses the belief that malaria is the chief factor in the aetiology of blackwater fever. He considers that death in fulminating cases of blackwater is due to the three following causes: (1) Blood corpuscles are destroyed in enormous numbers by the malignant tertian parasite; the ghosts of these red cells contain slightly toxic substances which exert a haemolytic action, and they likewise block up the renal tubules, producing anuria; (2) Owing to the great destruction of red corpuscles the tissues are not properly oxygenated and are hence incapable of proper functioning and the production of antibodies; (3) The tissues become overcharged with CO_2, a condition which is injurious to the heart muscle and nervous system.

W. Y.

POPOW (P. P.) & ZEISS (H.). Das Schwarzwasserfieber in Russland. [**Blackwater Fever in Russia.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 284–292. [14 refs.]

The following summary is given:—

1. Blackwater fever has hitherto (1879–1923) been seen in St. Petersburg, Moscow, Novorossisk, Batum, Baku, Transcaucasia, Armenia, and the Transcaspian district.
2. Natives and foreigners are equally attacked.
3. In all 90 cases are described in Russian literature, and of these 85 can be considered to be true cases of this disease. Two cases were indefinite, and of the remaining 3 there is no documentary evidence. Of the 85 certain cases 83 were malarial and followed quinine treatment, 1 was malaria and occurred after neosalvarsan, and 1 had apparently neither malaria nor quinine: the series comprised 70 men and 15 women.
4. The disease occurred one month to two years after the first attack of malaria.
5. Almost all cases of blackwater fever in Russia occur in winter, or in the colder periods of the autumn or spring: the climatic cold doubtless plays an important part in precipitating attacks in Russia.

W. Y.

DUPUY. Fièvre bilieuse hémoglobinurique. [**Blackwater Fever.**]—*Bull. Méd. du Katanga.* 1925. June. Vol. 2. No. 3. p. 121.

This note is a record of 4 cases of blackwater fever—one complicated by haemorrhagic pleurisy, one complicated by a relapse, one mild case, and one very severe case with intense anaemia and albuminuria—successfully treated by subcutaneous injections of anti-venom.

W. Y.

RUDOLF (G. de M.). **Haemoglobinuria following Malarial Treatment of Quaternary Syphilis.**—*Brit. Med. Jl.* 1925. May 23. pp. 964–965. [3 refs.]

Reference is made to the fact that SCHILLING and JOSSMAN have reported an instance in which haemoglobinuria occurred in a patient experimentally infected with *P. vivax* (see this *Bulletin*, Vol. 22, p. 417);

these authors were not definitely able to exclude paroxysmal haemoglobinuria, but believed that the case was one of blackwater fever. Rudolf gives details of a similar case. A man aged 56 was given a subcutaneous injection of defibrinated *P. vivax* blood on October 25, 1923. He developed fever 12 days later, and was allowed to have 9 rigors, the last of which occurred on November 22. A course of quinine treatment was commenced the following day, viz.: 20 grains daily for 3 days and then 10 grains daily for the following 14 days. In addition, three doses of neokharsivan were given, the last on December 30. The temperature remained normal until February 18, 1924, *i.e.*, 71 days after the last dose of quinine, when it rose to 103·6° F., and black urine was passed. The next day the urine was red and then gradually became normal.

The author discusses the question whether this attack was paroxysmal haemoglobinuria or blackwater fever, and reaches the conclusion that it was probably a case of the former complaint, notwithstanding the fact that examination for the presence of cold haemolysin was negative.

W. Y.

THOMSON (John Gordon). **The Morphology of** *Plasmodium falciparum* **found associated with Haemoglobinuric Fever in Southern Rhodesia; with Notes on the Blood Changes produced by this Parasite, and on the Prevention of Blackwater Fever.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 129–135. [4 refs.] [United Fruit Company, Boston, Mass.]

Haemoglobinuric fever may be associated with any of the three malarial parasites, but in Thomson's opinion the only true causal factor is *P. falciparum*. In Southern Rhodesia during 1923, of 100 positive blood films *P. falciparum* was found in 96, *P. vivax* in 3, and *P. malariae* in 1; very similar figures were obtained the previous year. In 23 cases of blackwater fever examined before the onset, *P. falciparum* was found in every instance. In all cases of blackwater fever examined before the onset it could not be claimed that the infection in the peripheral blood was heavy, but an examination of a single blood film in malignant tertian malaria gives no real indication of the amount of infection in the body. In all positive cases there was remarkable absence of acute symptoms, the patients felt out of sorts, were anaemic, had characteristic lemon-tinted sclerotics, and the majority complained of biliousness and attacks of indigestion with occasional fever. All these symptoms are, in fact, characteristic of long-standing pernicious malaria. In 23 of the author's cases parasites disappeared from the peripheral blood the day after the onset of haemoglobinuria.

Referring to the morphology of the parasite, the author points out that it has been usual to recognize only one species in benign tertian and quartan malaria respectively, but that difficulties have arisen with regard to malignant tertian malaria. These difficulties are due to the various clinical manifestations caused by it, and also to the enormous differences seen in the shape and size of the asexual forms in the peripheral blood. A brief summary of the literature on the subject is given. In view of the differences of opinion regarding the unicity of the various malignant tertian parasites which have been described, Thomson decided to examine carefully parasites found associated with blackwater fever in Southern Rhodesia. He was, however, unable to determine any morphological differences, and concludes that there is only one species of malignant tertian parasite in Rhodesia, viz., *P. falciparum*.

W. Y.

BOURGES (Henry). Hémoglobinurie avec hémolysinémie, déglobulisation massive et ictère polycholique intense au cours d'un processus hémolytique latent chez un paludéen ancien. [**An Unusual Case of Haemoglobinuria in a Former Subject of Malaria.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1925. Feb. 26. Year 41. 3rd Ser. Vol. 49. No. 7. pp. 267–271. [2 refs.]

The patient to whom this paper refers contracted malaria in Macedonia in 1915. From April, 1922, to April, 1924, he lived in Tchad without, however, exhibiting the least sign of malaria. On the way home, shortly after arriving in France, he had several attacks of fever. He was in hospital from June 20 to July 4, and was slightly icteric and anaemic, the spleen was enlarged and the urine normal; the blood was negative, as was also the Wassermann reaction. On September 25 he was again admitted to hospital for jaundice and anaemia. On October 1, during the night, he complained of pains in the epigastrium, which were followed by repeated bilious vomiting. On examination the patient was found to be intensely icteric, the liver was enlarged and tender, the spleen was considerably enlarged, the faeces were hypercholic, the urine was small in quantity and of a port wine colour, the temperature was normal, and the pulse 100. On October 2 the jaundice was still marked, the spleen was enlarged and the urine contained albumen, but no casts. The red cell count was 1,707,000. Examination of the blood failed to reveal the presence of auto- or iso-agglutinins, or of autolysins, but an isolysin reaction was obtained. A further history of the case, which terminated in recovery, is given in detail.

The author then goes on to consider the cause of this condition. It was possible to exclude paroxysmal haemoglobinuria owing to the negative autolysin reaction. The history of malaria suggests that the case might be simply one of blackwater fever, but the author points out that the total absence of fever constitutes a difficulty, and he finally comes to the conclusion that the clinical and haematological signs presented by the case suggest that it was one of haemolytic icterus, secondary to an anaemia of malarial origin.

W. Y.

KESSLER (A.). Ueber die Bedeutung der Lezithinhämolyse für die Schwarzwasserfiebertheorie. [**The Significance of Lecithin Haemolysis for the Blackwater Theory.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Apr. 1. Vol. 29. No. 4. pp. 153–162. [3 refs.]

Reference is made to the conclusion of KRITSCHEWSKY and MURATOFFA that the haemoglobinuria in malaria is in great part due to the combined action of quinine with lipoid substances of the organism (this *Bulletin*, Vol. 21, p. 386). The author has investigated this question and finds that lecithin in great dilution aids quinine haemolysis. On the contrary, however, his experiments afford no support for the view that serum rich in lipoids accentuates quinine haemolysis; even with a serum so rich in lipoids as was one obtained from a comatose case of diabetes no increase in quinine haemolysis was obtained.

W. Y.

Trout (Charles Lewis). **The Treatment of Blackwater Fever.**—*Jl. Trop. Med. & Hyg.* 1925. June 15. Vol. 28. No. 12. pp. 225–228.

During the author's five and a half years' practice as a mission doctor in the Congo, four missionaries died from blackwater fever—three during the second attack and one during the first. The last case had been in the Congo five years and had taken 5 grains of quinine daily; the others took quinine once or twice a week.

This paper is based on the treatment of 34 patients, 12 of whom had a second attack. Seventy-five per cent. took quinine daily. The author lays stress on the value of anti-venom or horse serum in the treatment of blackwater and states that since its adoption no case has been lost, and that several cases in a moribund state made a remarkable recovery after injections of serum.

The following summary of the treatment recommended is given:—

"(1) General measures: good nursing, proper attention to kidneys, bowels, heart, etc.; use of salt solution; hypodermoclysis.

"(2) Administer anti-venom or horse serum: one ampoule, repeat in case of relapse. In asthmatics use crotalin $\frac{1}{100}$ gr., if there is sensitivity to horse serum.

"(3) Give by mouth plenty of fluids and inject subcutaneously 0·25 grm. caffeinae sodio-benzoatis.

"(4) Administer orally cantharides tincture: prepare as follows: 5 drops in 2 ounces of water, to which add 1 dram of sodium bicarbonate. Stir this mixture well and give two teaspoonfuls every half-hour until urine is normal.

"(5) During icterus give calomel in small divided doses.

"(6) During convalescence give iron tonics."

W. Y.

Schaefer (H.). Ueber Novasurol bei Schwarzwasser-Anurie. [**On Novasurol in Blackwater Anuria.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 310–311.

Details are given of a case of blackwater in which revival took place, apparently after the onset of anuria, after two subcutaneous injections, each consisting of 1 cc. of novasurol; death followed after 16 days' illness.

W. Y.

Facio (A. A.) & Rojas (M. D.). **The Treatment of Haemoglobinuric Fever with Caffeine Sodio-Benzoate.**—*Jl. Trop. Med. & .Hyg.* 1925. Feb. 16. Vol. 28. No. 4. pp. 86–88.

In this paper the authors advocate the administration of caffeine sodio-benzoate grains 3, intramuscularly, twice daily, in cases of blackwater fever. They have a record of 12 cases of haemoglobinuric fever—"5 of them were true blackwater fever, and the remaining 7 were probably cases of quinine haemoglobinuria"—all of whom recovered. An experiment is recorded showing that the drug *in vitro* exerts an anti-haemolytic power when added to a haemolytic system consisting of anti-human haemolytic amboceptor, complement, and human red cells.

W. Y.

Huchard (G. L.). A propos d'un nouveau cas d'hémoglobinurie paludéene. **[A Fresh Case of Blackwater Fever.]**—*Bull. Soc. Path. Exot.* 1925. July 8. Vol. 18. No. 7. pp. 590–592. [1 ref.]

Reference is made to a previous note relating to a case of blackwater fever, in the blood of which malaria parasites were present during the haemoglobinuria, which was treated successfully with quinine. A second case of the same kind is reported.

W. Y.

Ferguson (H. R. M) **Case of Blackwater Fever in African Child.**—*Nigeria Ann. Med. & San Rep. for the Year 1923.* Appendix IV. p. 35.

A few details are given concerning an attack of blackwater in an African girl aged four years The urine was typical of blackwater fever, the patient had been vomiting, was jaundiced, and had a large and tender spleen. Quinine hydrochloride grs. 3. was given twice daily, and in 4 days the urine was clear. The blood was not examined.

W. Y.

Huchard (G. L). Hémoglobinurie et quininothérapie. **[Blackwater Fever and Quinine.]**—*Bull. Soc. Path. Exot.* 1925. Mar. 11. Vol. 18. No. 3. pp. 289–292.

Clinical details are given of a case of blackwater fever and of the treatment administered. Certain conclusions are drawn [which in the reviewer's opinion are unjustifiable from an observation on a single case].

W. Y.

Carmody (Ernest P.). **Some Observations on Blackwater Fever.**—*Brit. Med. Jl.* 1925. Jan. 17. pp. 106–107.

An account is given of the author's observations on, and method of treating, 36 cases of blackwater fever in the Bindura district of Southern Rhodesia.

W. Y.

Calov (W. L). Some Notes on a Series of Cases of Blackwater Fever in the Territory of New Guinea.—*Med Jl Australia.* 1925 Sept. 26. 12th Year. Vol. 2. No 13. pp. 396–398.

MISCELLANEOUS.

Fernando (Antonio S.) & Nicholas-Fernando (Felisa). **Tropical Oto-Laryngology with Special Reference to the Philippine Islands.** —*Jl. Trop. Med. & Hyg.* 1925. June 1. Vol. 28. No. 11. pp. 202–207.

The authors have studied the cases in the ear, nose and throat department of the Philippine General Hospital, where some 6,000 cases are seen yearly, over a period of six years. They tabulate the frequency of the various affections and draw attention to the high incidence of acute rhinitis and tonsilitis in certain periods of the year the frequency of middle-ear suppuration among poor children, the frequency of furunculosis of the ear, the relative frequency of atrophic rhinitis in young girls and women who lead a sedentary life, and the comparative absence of deviations of the septum. They discuss the climate, the social conditions of the people and their primitive methods of treatment, *e.g.*, many auditory affections may be traced to the Chinese barber who removes wax with his one set of never-sterilized instruments. They add notes on the conditions seen in this department which are due to leprosy, yaws and beriberi.

A. G. B.

Langeron (Jean). La médecine chez le noir. A propos d'une de leurs entités cliniques. Le "Kapopo." [**"Kapopo" in Negroes in Central Africa.**]—*Bull. Méd. du Katanga.* 1925. Apr. Vol. 2. No. 2. pp. 57–59.

"Kapopo," so named by the Rhodesian natives and the Basanga, has probably more than one origin. Necrosis of the subcutaneous tissues and deeper layers is followed by deformities and fistulous sores; the development is slow and is unhindered by treatment. The author thinks some cases are late syphilis or yaws; others have a mycotic cause. Novarsenobenzol in one case and Lugol's solution in the other may lead to recovery.

A. G. B.

Hendriks (J. A.). Statistiek eener bergkampong. [**Statistics of a Mountain Village.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 2. pp. 212–218. With 1 text fig.

Hendriks kept records of the population of a mountain village (altitude, 1,200 metres) without endemic tropical diseases, as well as of a village in the plain, where malaria is common. The mortality was 35·4 per 1,000 in the latter, against 12·3 per 1,000 in the first [*i.e.*, lower than the average in Holland during the last 10 years, 12·6 per 1,000]. The birth rate was high in both places (31·9–31·4 per 1,000). The malaria mortality concerns in the first place the children. Malaria has no influence on the birth rate.

W. J. Bais.

NICOLAI (A.) & TIJSSEN (J.). Vervalschte of minderwaardige oleum chenopodii? [**Adulterated or Inferior Chenopodium Oil?**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 2. pp. 248–253.

During 1924, Nicolai noted a marked increase of the hookworm admission rate in his hospital and longer duration of the disease after the chenopodium cure than in previous years. Other apparent reasons being absent, the chenopodium oil in use was thought to be of inferior quality. It was a cheap brand of the oil which, however, did not markedly differ in appearance or in smell from the usual supply. Seven hookworm patients received a cure with the suspected oil (48 drops) followed by one with other chenopodium oil. Of the total number of worms expelled by these two cures 22 per cent. fell to the first cure (the percentage to be expected with superior oil being 90). From the records of VERVOORT's original experiments with chenopodium oil Tijssen found that 13 drops of the oil followed by a test cure expelled 41 per cent. of the worms. The suspected oil thus appeared to develop only a fraction of the normal activity. Its physical characteristics practically responded to the standard of the U.S. Pharmacopoea; therefore the oil could hardly be adulterated, but is merely to be considered as an inferior quality. The existence of chenopodium oil of low activity has not been reported so far.

W. J. Bais.

NICHOLLS (Lucius). **Immunisation to Bacterial Diseases by Absorption through Mucous Membranes or the Skin.**—*Ceylon Jl. Sci.* (Section D. Med. Sci.) 1925. Apr. 27. Vol. 1. Pt. 2. pp. 99–105.

The author draws attention to the wide field in the tropics for immunization against bacterial diseases by ingested vaccines or applications to the skin if more definite proofs of BESREDKA's claims can be obtained. He has carried out a series of experiments on animals at Colombo, for the details of which the paper must be consulted. Rabbits received plague and pneumococcal vaccines by the mouth, the rectum or by skin friction, but showed no signs that absorption of the vaccines into the general system had occurred. The author thinks that some general absorption of and reaction to vaccines is necessary for the production of immunity. Intranasal injection of vaccines of *B. pestis* and pneumococcus was followed by some immunity to the respective organisms. He relates an experiment in East Africa during the war in which vaccines of *B. dysenteriae* were given by the mouth to native labourers in the carrier corps:—

> "The vaccine was prepared by inoculating a 2-litre flask of sterile milk with a freshly isolated culture of *B. dysenteriae* (Shiga). The flask was incubated for 24 hours and sterilized by heating to 60° C. for half an hour. The milk acquired no taste or scent, and the dose used was from 1 to 3 cc. On the day after the vaccine had been taken almost all the recipients had slight diarrhoea, which varied from one loose stool to three or four stools containing a small quantity of blood and mucus. A dose of 1 cc. of the vaccine usually caused the passage of a loose stool which did not contain blood or mucus. But 3 cc. of the vaccine almost invariably caused the passage of blood and mucus. A slight malaise and some griping occurred in many cases. But all the patients had fully recovered in 24 hours . . .
>
> "It is reasonable to suppose that some immunity would result from this mild and transient attack of dysentery."

Unfortunately the after-history of these cases could not be obtained.

A. G. B.

MILLS (Ralph G.). **The Possible Relation of Copper to Disease in the Korean People.**—*Jl. Amer. Med. Assoc.* 1925. May 2. Vol. 84. No. 18. pp. 1326–1327. [7 refs.]

MALLORY and others have demonstrated a relation between chronic copper poisoning and haemochromatosis, in which condition diabetes of the bronzed type is common. The Koreans use brass at every phase of the preparation and storage of their food, some of which must have some solvent action; even a family in reduced circumstances will cling to its brass bowls. The Koreans should therefore suffer from haemochromatosis. However, in a series of 100 post-mortems, no disturbance of pigmentation of the internal organs was noticed, and in 3,045 routine hospital examinations of urines, only two cases of diabetes came to light; in another series the diabetics formed 0·1 per cent. of the hospital clientèle. Cirrhosis of the liver of unknown origin is common among Koreans, especially girls below the age of 15; possibly this is due to copper intoxication. Workers in brass in Korea do not suffer from any trade disease. [Is not this use of brass vessels common to many Asiatic peoples?]

A. G. B.

LHUERRE (H.). De la rareté des luxations chez les indigènes de l'A.O.F. **[Rarity of Dislocations in French West Africa.]**—*Bull. Soc. Path. Exot.* 1925. Mar. 11. Vol. 18. No. 3. p. 293.

Attention is drawn to the rarity of dislocations among native patients in West Africa. In the register of the X-ray department of the native hospital of Dakar for the last five years only two cases of dislocation are recorded, against 170 cases of fracture.

A. A.

GUPPY (H. B.). **A Reminiscence of Sir Patrick Manson at Amoy.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Jan. 15. Vol. 18. No. 7. pp. 385–386.

The author writes with admiration of the exalted spirit that animated the Consular Service, the Imperial Customs Service, and the Medical Profession in China, when he was on that Station as a naval surgeon in 1877–80. All the doctors were capable men, versatile and efficient. "Of such a type was Patrick MANSON, working with his microscope amongst his Chinese patients in his private hospital at Amoy, his appearance of health and vigour more suggestive of a British hunting squire than of a student on the eve of a discovery that has wrought so much for the benefit of mankind."

There was cholera in Amoy; the dead and dying were lying in the streets, and when the writer asked what he ought to do, MANSON promptly answered, "Write a letter, on service, to your captain, and advise him to leave at once."

A. A.

SERGENT (Edmond), PARROT (L.) & DONATIEN (A.). **On the Necessity of having a Term to express the Resistance of Carriers of Germs to Super-imposed Infections.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Jan. 15. Vol. 18. No. 7. pp. 383–385. [5 refs.]

From the point of view of immunity the authors recognize two kinds of infectious diseases, namely: (1) Those, such as smallpox, scarlet fever, measles, etc., that produce a permanent immunity, which, although the attacking microbes have disappeared, renders re-infection "impossible"; and (2) those, such as malaria, that, after an acute stage, remain as a chronic infestation during the continuance of which re-infection is impossible, though re-infection is possible after the chronic infestation is brought to an end.

To diseases of the first kind—acute diseases followed by a true solid resistance—the authors would restrict the application of the terms "immunity," "immunization," "immunized," "immune," etc. For diseases of the second kind—chronic diseases giving a good resistance only so long as the chronic infection is lasting—they propose as corresponding terms "premunition," "premunized," etc., substituting the prefix *prae* or *pre* for the prefix *im* throughout the series of terms. And they request their British colleagues to consider the possibility of giving currency to the verb "premunize," the substantive "premunition," and the adjective "premunized." "Words," as Thomas Hobbes said (though the saying is commonly attributed to his contemporary, Bacon), "are wise men's counters, they do but reckon by them", and if they are wanted for reckoning they can pass into use without formality.

A. A.

CUNNINGHAM (J.) & RAMAKRISHNAN (S.). **The Classification of the Streptococci found in Tropical Affections.**—*Indian Jl. Med. Res.* 1925. Jan. Vol 12 No 3 pp. 481–485. [5 refs.]

The authors have subjected all streptococci received in the King Institute from human pathogenic sources to a detailed examination with a view to their further differentiation, and have followed the classification of HOLMAN, who divides them into 16 types, 8 haemolytic and 8 non-haemolytic, based on differences in the fermentation of lactose, mannite and salicin. They have examined 141 strains and set forth their results in a Table. Haemolytic and non-haemolytic strains were found in almost equal number. Most of their strains came from mild skin affections and the mouth, throat and nose. The frequency of certain groups differs from that of other observers, chiefly in America, and this is attributed to the different sources from which they collected their material. It is suggested that the types of streptococci found in the severer infections do not differ from those found in similar cases in temperate climates.

A. G. B.

KINGSBURY (A. Neave). **A Note on the Alleged Deterioration of Insulin in the Tropics.**—*Lancet.* 1925. Jan. 3. pp. 18–19. [5 refs.]

Although Bose reported favourably on the stability of insulin in the tropics the majority of writers are of opinion that its potency is lessened by even a short storage in a tropical temperature, an opinion corroborated by the ample and careful observations of STOTT on diabetics. The present author makes known the results of some experiments at Kuala Lumpur that reconcile these contradictory opinions in so far as they are based on experiments upon rabbits in the tropics. A sample of insulin after being stored for six months in a building in which the average temperature during that term was 79·6° F. at 9 o'clock a.m., 84° at noon, and 83·5° at 3 o'clock p.m., was re-assayed on "local" rabbits and appeared to have deteriorated about 40 per cent. It was also re-assayed on the first generation of imported rabbits and showed little, if any, deterioration.

Apart from this question as to the suitability of rabbits for insulin-testing in the tropics, the author points to STOTT's work as evidence that dissociation occurs in some samples of insulin and to CHEADLE's experiments —clinically confirmed by himself—as to the influence upon insulin of the pH concentration.

A. A.

TROCELLO (E.) & CRUTO (A.). **On the Influence of High Temperature on the Preservation of Insulin.**—*Jl. Trop. Med. & Hyg.* 1925. Mar. 2. Vol. 28. No. 5. pp. 103–105. [1 ref.]

Experiments made in Europe on rabbits with insulin, solid or in solution. The solid form had not lost potency after 35 days at 42° C.; the liquid form lost about one-half.

A. G. B.

YAKIMOFF (W. L.) & WASSILEWSKY (W. J.). Au sujet de la blastocystose. [**Blastocystosis.**]—*Bull. Soc. Path. Exot.* 1925. Feb. 11. Vol. 18. No. 2. pp. 130–132. [1 ref.]

The main of this paper from Petrograd consists of brief abstracts of three cases diagnosed—from the leading symptoms of abdominal pain, diarrhoea, and glairy or muco-sanguineous liquid stools—as haemorrhagic colitis, in which the only micro-organism discovered in the stools was *Blastocystis hominis*. In one case 2 specimens of *Ascaris lumbricoides* were passed. The authors have also observed cases where blastocystis provoked only diarrhoea.

A. A.

WOLBACH (S. Burt). **The Rickettsiae and their Relationship to Disease.** —*Jl. Amer. Med. Assoc.* 1925. Mar. 7. Vol. 84. No. 10. pp. 723–728. [30 refs.]

This is a survey and summary of the subject from 1916 when ROCHA-LIMA gave the name "Ricksettsia" to certain minute "micro-organisms" found in lice. It does not contain any additions to a theme of which the author is a leading exponent, whose work has been frequently noticed in this *Bulletin*. It is sufficient, therefore, to quote his conclusions :—

"The term 'rickettsia' should be applied only to micro-organisms adapted to arthropods ('insects') and pathogenic for vertebrates and having the following characteristics: small size, pleomorphism, slight affinity for aniline dyes and intra-cellular habitat in the arthropod host.

"We should keep in mind that we know practically nothing about the non-pathogenic, rickettsia-like, intracellular micro-organisms of arachnids and insects, whether casually present or in the rôle of symbionts. The work so far done in this field has been superficial and evasive of the main problems concerning relationships between micro-organisms and hosts; it has, however, served to obscure the status of the pathogenic rickettsiae. That *Dermacentroxenus rickettsi* is the cause of Rocky Mountain spotted fever, and that *Rickettsia prowazeki* is the cause of typhus, I regard as proved. There is strong presumptive evidence that *Rickettsia pediculi* is the cause of trench fever. It is certain that the rickettsiae represent a new group of micro-organisms, and probable that other pathogenic ones will

[Full references to original papers are given in footnotes, but we may refer here to the following notices in this *Bulletin* : Vol. 15, p. 309 ; Vol. 16, p. 420 ; Vol. 18. p. 262 ; Vol. 20, pp. 387, 660, 677, 789, 808 ; Vol. 21, pp. 664, 674, 917.]

A. A.

LHUERRE (H.). Sur l'emploi des Appareils plâtrés dans les pays chauds. **[Plaster Apparatus in Hot Countries.]**—*Bull. Soc. Path. Exot.* 1925. Jan. 14. Vol. 18. No. 1. pp. 118–119.

The author finds that at Dakar plaster applied for the immobilization of fractures, though it sets well in the dry season, fails to do so in the wet season; a failure which he attributes to the atmospheric humidity. For the present he has returned to extension and counter-extension.

A. G. B.

HOFFMANN (W. H.). Das weisse Blutbild im Anschluss an die Schutzpockenimpfung **[The Leucocyte Formula after Smallpox Vaccination.]**—*Arch. f. Schiffs- u Trop.-Hyg.* 1925. Feb. Vol. 29. No. 2. pp. 67–68. [1 ref.]

During an epidemic of smallpox in Havana the author observed the blood changes in 12 persons after vaccination: 21 observations in all. His result, set forth in a table, confirm those of SHINTAKE [*Arch. f. Schiffs-u. Trop.-Hyg.*, Vol. 28, p. 62.]. There was leucocytosis, lymphocytosis, a shift to the left of the Arneth index and an eosinophilia. These changes are compared with those of smallpox [this *Bulletin*, Vol. 21, p. 332].

A. G. B.

BROSIUS (Otto T.). **Some Extra-Luetic Therapeutics of Dioxydiamidoarsenobenzol and its Modifications.**—*Amer. Jl. Trop. Med.* 1925. Jan. Vol. 5. No. 1. pp. 27–40.

In his hospital at Barranquilla, Colombia, the author has given over 1,500 intravenous injections of novarsenobenzol or its variants, and of these 600 for diseases other than syphilis and 400 for malaria. He finds that one injection of the drug is useless in one-fourth of cases of malaria, in one-fourth of chronic cases the drug cures both benign and malignant tertian, without quinine, and in one-half of chronic cases it is excellent after an incomplete quinine course. It needs to be repeated, and it has the advantage of cutting short the period of disability. The arsenical can usually be given after 10–14 days' quinine treatment. Illustrative cases, some striking, are given. The author prefers large doses, 0·75 or 0·6 gm., and has seen gametes persist where a course was started with a dose of 0·3 gm.

Novarsenobenzol cures certain myalgias in the tropics permanently, as in a case cited where there was no luetic factor and one injection sufficed.

About a dozen cases of amoebic dysentery were refractory to emetine and bismuth treatment till novarsenobenzol had been administered; illustrations are given, in some of which there was no evidence of syphilis. A type of pinta or caraate disappears under 2 or 3 injections of novarsenobenzol.

A. G. B.

Condition of the Teeth in Native Adolescents.—S. African Med. Rec. 1925. Jan. 10. Vol. 23. No. 1. p. 11.

The author examined the teeth of 138 Bantu girls of 14 years and upward who entered the Lovedale Institution in 1910–12; most came from the Cape Province. Of these 138 96 (or 70 per cent.) had perfect teeth; 40 others had among them 68 imperfect or missing teeth. These figures compare very favourably with those from a series of white children collected by Brown in the Cape Province, only 28 per cent. of whom were free from caries.

A. G. B.

D'Anfreville de la Salle Au sujet de l'enquête sur l'alimentation des indigènes de nos colonies au point de vue de leur résistance aux fléaux et à celui de repeuplement—*Rev Méd et Hyg. Trop.* 1924. Aug–Dec. Vol. 16. No 6 pp 167–173.

Bideau. Notes médicales recueillies pendant la campagne de l' "Antarès" sur la côte occidentale d'Afrique, au Brésil et aux Antilles (1922–1923).—*Arch. Méd. et Pharm. Nav.* 1925 July–Aug.–Sept. Vol. 115. No. 3. pp. 218–234.

Cowdry (E. V.). Medical Research in China—Reprinted from *Science.* 1925. Oct. 23. Vol. 42. No. 1608. pp. 374–377.

Dubois (Albert). La pathologie exotique en 1924–1925.—*Bruxelles-Méd.* 1925. Nov. 8. Vol. 6. No. 2. pp. 25–33. [1 ref.]

Hapke (F). Ein geheilter Fall von Chininidiosynkrasie—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925 July 1 Vol. 29. No. 7. pp. 343–344.

Harris (D T.). Studies on the Biological Action of Light.—*Proc. Roy. Soc.* 1925 June 2 Ser B. Vol. 98. No. B 688. pp. 171–187. With 13 text figs. [23 refs]

Jamison (S. Chaille) Sickle Cell Anemia: Case Report—*Southern Med. Jl.* 1925. Nov. Vol. 18 No 11 pp 795–796. With 1 text fig. [7 refs.]

Lister (Spencer). The Work of the Laboratory in Relation to the Practice of Medicine.—*Med. Jl. S. Africa.* 1925. Aug. Vol. 21. No. 1. pp. 12–15.

Loevenbruck. Deux cas d'encéphalite lethargique chez des indigènes—*Bull. Méd. du Katanga.* 1924 Dec Vol 1. No 6 pp 247–249.

Nakadate (Kohkichi). Vergleichende Untersuchung ueber die Rassenhygiene mit besonderer Beruecksichtigung der Japaner in der Sued-Mandschurei—*Jl. Oriental Med.* 1925 May. Vol. 3. No. 2. German summary pp. 57–59. [In Japanese.]

Narasimhan (N. S.). A Case of Contracture of the Mouth.—*Indian Med. Gaz.* 1925. Feb. p. 72.

Patenostre. Notes sur la médecine et l'obstétrique indigènes en Afrique occidentale française—*Ann. de Méd. et de Pharm. Colon.* 1925. May–June–July–Aug. Vol. 23. No. 2. pp 332–339.

Reynaud (G.). Médecins et Colonies: colonies à assainir—médecins à recruter.—*Presse Méd.* 1925. June 3. Vol. 33. No. 44. pp. 739–740. [8 refs.]

Spittel (R. L.). The Art of the Indian Chiropodist—*Indian Med. Gaz.* 1925. July. Vol. 60. No. 7. pp. 316–317. With 3 text figs.

Warnock (John). Twenty-eight Years' Lunacy Experience in Egypt (1895–1923).—*Jl. Mental Science.* 1924. Apr., July & Oct. Vol. 70. Nos. 289, 290 & 291. pp. 233–261; 380–410; 579–612.

REVIEWS AND NOTICES.

Höjer (J. Axel). [Former First Assistant at the Children's Clinic of the Karolinska Institute, Stockholm.] **Studies in Scurvy.**—*Acta Paediatrica.* Upsala. 1924. May 17. Vol. 3. (Supplement.) 278 pp. With 6 coloured plates, 94 micro-photographs & 33 charts.

The main interest of this book on scurvy, which has the character of an elaborate thesis submitted for a higher University degree, lies in the complete study presented of the pathological anatomy of the disease as produced experimentally in the guineapig. In addition, a description is given of an investigation of the relation between a scorbutic condition of the organism and its resistance to tubercular infection.

Each section of the book contains a detailed summary of the literature and history of the subject. Beginning with a discussion of the various methods employed for inducing scurvy in the guineapig, the author describes some of his own endeavours to evaluate the antiscorbutic potency of certain fruits and vegetables. In some cases the values obtained are not in accord with those of other workers, and, in explanation, the author suggests that the antiscorbutic value of particular fruits may be dependent upon the amount of sunshine received during ripening. This theory, however, is in opposition to the results obtained by other workers, who have found antiscorbutic properties in plants grown with minimum incidence of light.

In the chapters devoted to pathological anatomy, a complete study is made of the histology of the organs and tissues of guineapigs suffering from scurvy in all degress of severity. With the exception of the lungs all the tissues examined showed pathological changes. Most space is devoted to the histology of the teeth and bones. A somewhat new theory is advanced to explain the appearances shown by scorbutic bone in the growing animal, viz., that these are caused by failure of the osteoblasts to discharge their normal function of forming new bone tissue, while the process of calcification is unhindered. As a result, in the teeth and lower jaw, and also in the shafts of the long bones, this pathological bone is porous and brittle, while fully calcified.

The other tissues examined include the muscles, heart, liver, spleen, kidneys, adrenal and salivary glands, lungs, blood, blood vessels and connective tissue. The muscles, heart, liver and kidneys showed well-marked atrophy and in addition necrosed areas impregnated with deposits of lime salts. In the opinion of the author these deposits in the kidney suggest that an abnormal excretion of calcium salts is taking place through this organ. The haemorrhages characteristic of scurvy are explained as due partly to weakness in the vascular wall, caused by lack of connective tissue therein, and partly to the deficient support given by the atrophic tissues outside.

In the chapters on scurvy and tuberculosis, experiments are described in which removal of antiscorbutic materials from the diet appeared to shorten the life of guineapigs infected with tuberculosis, and to increase the severity of the lesions. Conversely, in a "human experiment," carried out in the spring of the year upon 44 patients in a tuberculosis sanatorium, the addition of extra antiscorbutic to the diet in the form of an orange a day caused favourable progress in comparison with patients to whose diet no such addition was made.

Although the book is written in admirable English, some slightly unusual expressions render the meaning a little obscure in some of the more detailed passages.

Harriette Chick.

JAPANESE JOURNAL OF MEDICAL SCIENCES. Abstracts.—Vol. 2. No. 1. pp. 1–51; No. 2. pp. 53–184; No. 3. pp. 185–238. 1924–25. Tokyo: National Research Council of Japan.

The second volume of the *Japanese Journal of Medical Sciences Abstracts* (National Research Council of Japan) has recently reached the Bureau. It consists entirely of abstracts in German or English of papers published in Japan between January and June, 1922. Of three fascicles, No. 1 deals with physiology, biochemistry and bacteriology, and contains 19, 91 and 123 abstracts; No. 2 with anatomy, hygiene, protozoology and serology (201, 19, 2, and 40); No. 3 with pathology (204) and pharmacology (32). Under pathology some 35 articles on helminth infection are summarized. The value of such work would be materially increased if publication were more prompt.

A. G. B.

BEIHEFTE ZUM ARCHIV FÜR SCHIFFS- UND TROPEN-HYGIENE. 1925. Vol. 29. No. 1. pp. xv+496. With 47 plates, 6 charts & 13 text figs. Festschrift des Hamburgischen Instituts für Schiffs- u. Tropenkrankheiten zum 25 Gründungstage am 1. Oktober 1925. [**Volume Commemorative of the 25th Anniversary of the Institute for Ship- and Tropical Diseases, Hamburg.**] Leipzig: Verlag von Johann Ambrosius Barth. [Price Rm. 24.]

This is a kind of jubilee book to celebrate the twenty-fifth anniversary of the foundation of the Hamburg School of Tropical Medicine, and like the generality of its class, is remarkable more for profusion and variety than for uniform profundity. It is ceremonially introduced by Dr. TAUTE, and in its long list of contributors are to be seen names from many parts of both hemispheres, including two from our own dominions. We may mark here its range and a few of the salient points touched in its course, leaving further particulars to the future attention of the sectional editors.

There are five papers on malaria in various aspects; but the most serious contribution to this subject occurs, incidentally, in a superbly illustrated essay by Hermann DÜRCK, entitled "Foci of neurologia-proliferation associated with diseases of the central nervous system," where, among other things, the formation of perivascular granulomata in the malarial brain receives very full attention both in text and in plates. Of six papers on dysentery of protozoan causation, two deal exclusively with Yatren treatment, and one is a good study of balantidium infection in man and ape. Among five papers on spirochaetoses, one of a ratiocinative kind by MANTEUFEL & WORMS on percutaneous inoculation is significant and contains a bibliography which is not exclusively German; and another by SEYFARTH *et al.* of an experimental kind on the behaviour of the relapsing spirillum appears to be interesting. A paper by WALCH *et al.* on pseudotyphus in Sumatra may be mentioned, and one by Tewfik SALIM, of Constantinople, on antityphus vaccination with the blood of typhus patients contains some statistics and conclusions that may be useful. Attention may be directed to a contribution by FLU on the cholera bacteriophage. There are two serious studies on Verruga peruana, one by MACKEHENIE & WEISS, the other, illustrated, by MONGE. The contributions on skin diseases also include one on the treatment of pemphigus contagiosus with stibenyl. There are about a dozen papers on various branches of medical zoology, and here, perhaps, may be mentioned two by SCHILLING on the Chlamydozoa and one by MARZINOWSKY on the pathology and parasitology of canine leishmaniasis. Other subjects touched in varying measure are bacteriology, blackwater fever treatment, pathology, racial physiology, therapeutics, venereal disease in New Guinea, yaws, and minor questions of hygiene. The illustrations are a prominent and elegant feature of a praiseworthy book.

A. Alcock.

BUREAU OF HYGIENE AND TROPICAL DISEASES.

TROPICAL DISEASES BULLETIN.

Vol. 23.] 1926. [No. 2.

YAWS AND SYPHILIS: A CRITICAL REVIEW.*

By HUGH S. STANNUS,
Sectional Editor, Tropical Diseases Bureau.

GOUNDOU.

During recent years the question of the pathogeny of goundou has been reopened, and evidence in favour of this condition being a manifestation of yaws has been adduced. DURANTE and ROY (1920) have given an account of their histological findings in a case of goundou. The swelling they state is neither an exostosis nor an osteitis, but an inflammatory new growth probably due to an organism of low pathogenicity. TOURNIER (1922) relates the case of a boy of 6 years who developed goundou 6 months after an eruption of yaws and a year previous to being seen. There was also osteitis of the mandible, radius, ulna, tibiae and tarsus, trophic changes in the nails and Hutchinson's teeth with old dental malformations. Under treatment, while the other bony manifestations retrogressed, there was no change in the paranasal swellings. CLAPIER, working in the French Congo, believes that goundou is a manifestation of yaws.

It is to BOTREAU-ROUSSEL (1925), however, that we owe in the first place a most remarkable monograph on this condition, and to that author and CORNIL (1924), for a studied account of the histopathological changes found in 8 cases from the Ivory Coast, where BOTREAU-ROUSSEL saw 130 cases and operated on 113 in a single year. There is also a report by this observer upon a 15-year-old male skeleton now in the Dupuytren Museum in Paris showing osteitis of long bones and goundou. Everyone interested in this condition and its suggested relation to yaws should read the monograph with its wonderful set of photographs. It cannot be said that a yaws pathogeny for goundou has been proved, but the evidence is most suggestive. ROY (1925), in an article on goundou recently published, unaware apparently of the above-mentioned monograph, believes that goundou is still of unknown etiology, and while excluding syphilis and other diseases as possible causes equally has no hesitation in asserting that the condition is not due to yaws. He describes in haematin-eosin and safranin stained sections of a goundou tumour the occurrence of some three oval bodies

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* Continued from page 1.

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25–30 μ in diameter. They are mentioned without insisting on their possible significance. On the other hand, when the contents of this paper are studied, there is much evidence on the author's own showing to uphold Botreau-Roussel in his thesis. Not the least important point brought to light by this observer was the fact that he saw only two cases of goundou in 4 years until he operated on a case giving great relief to the patient, an episode followed by the appearance of 130 cases in 12 months. Compare this narrative with the statement which occurs in the Annual Medical Report, Uganda, for 1923, to the effect that a case therein reported is the first to be observed in Uganda. Goundou in its minor forms is a condition for which treatment is not sought, and many often passed unnoticed. The cases require to be sought for or attracted to the observer by some means as happened to the writer of the monograph. It would be useful if every case seen were reported with as full details as possible in the light of Botreau-Roussel's observations. For those who are unable to consult the original a summary of this monograph, and also of Roy's paper, appeared in this *Bulletin* [Vol. 22, pp. 421 & 650.].

JUXTA-ARTICULAR NODULES.

The pathogeny of the well-known and widely distributed condition thus described remains uncertain. There has, however, been a gradually increasing tendency to regard it as a manifestation of syphilis or yaws. Davey (1913), who was, I think, the first observer to suggest a framboesial etiology for J.A.N., in the lower Dedza district of Nyasaland, found 80 out of 964 male, and 1,414 female adults examined consecutively exhibiting juxta-articular nodules (no cases among 567 children). In this area yaws was very prevalent, and with the exception of 8 all the 80 admitted yaws and showed signs of having had the disease. Some of the 8 also showed signs of having had the disease, and he says it is probable all had done so. While thus among those persons with juxta-articular nodules 90 per cent. certainly, and 100 per cent. probably had had yaws, among the rest of the population 15·5 per cent. had a history or signs of having had the disease. Spittel (1922) believes juxta-articular nodules to be a part of yaws in Ceylon. Clapier (1900) found, in one area of the Congo, 29 cases among 500 persons examined; all said they had had yaws, and none showed signs of syphilis; the author is, however, cautious in drawing any conclusion. Botreau-Roussel mentions no cases in his monograph on framboesial osteitis and goundou. Jessner (1924) gives a general account of the condition with a useful bibliography. Foley and Parrot (1921) report 21 cases observed in Algeria, and all give a number of references to other cases. Onorato (1924) 9 cases in Tripoli. Jamin (1925) a case in Tunis. Cange and Argaud (1922) give a review of the literature and range themselves with those who believe in a syphilitic origin. Nogue (1921)(1922) met with 8 cases in Dakar, where syphilis is rife, but yaws absent. He also refers to two other cases; in one the nodes disappeared under N.A.B. treatment, in the other they were refractory. Decrops and Crambes (1923), in Morocco, where syphilis is rife, saw 16 cases of juxta-articular nodules; they also noted this condition in a Moroccan woman recently infected with syphilis with no response to antisyphilitic treatment. Dekester and Martin (1923), in Algeria, comment on 16 cases, observing that the condition is generally found in syphilitics, but Gros

(1907) only found 12 cases in 10,000 patients examined. **Remlinger** (1923) met with this condition in a Spanish resident in Tangier who showed no sign of syphilis but admitted gonorrhoea.

Da Matta (1921) believes juxta-articular nodules to be syphilitic manifestations, founding his opinion on the good results obtained in treating them with antisyphilitic remedies. He also discusses the priority in the discovery of the condition which was described by **Lütz** in Brazil, in 1892, and by **Jeanselme**, in Indochina, in 1909. **Broden** and **Bernard** (1925) describe the case of a Belgian resident of the Congo with no history or clinical manifestations of yaws or syphilis, but with a strongly positive Wassermann Reaction, findings common to 6 out of the other 9 cases of Europeans recorded in the literature. This case responded to treatment with sulpharsenol and bismuth. These European cases, excluding that reported by **Remlinger** in 1923 mentioned above, are: **Giblin** (1915), **de Brault** (1916), **de Gougerot-Burnier-Bonnin** (1920), **Poupelain** (1920), **Brouard** (1923), **Morin** (1924), all in persons who had been in the tropics, **de Quervain** (1920), **Gougerot**) 1924), 2 cases who had never lived in the tropics. **Broden** and his colleague, referring to site, give the order of frequence as trochanter, external malleolus, anterior tibial tuberosity, head of fibula, dorsal aspect of digits, acromion, sacrococcyx, ribs. They quote **Moncarey** as stating that near Basoko, Congo, juxta-articular nodules is a common condition among the natives, that yaws is widespread and syphilis very rare, also **Yernaux**, who states that in New Guinea, where the condition is common, the natives always distinguish between syphilis and yaws, and attribute it to the latter. **Noel** (1925) has recently reported another case of a European woman seen in India, but who had resided in N. Africa.

Van Dijke and **Oudendal** (1922)(1923), in Dutch East Indies, and **Sobernheim** (1924) of Berne have demonstrated spirochaetes in the nodes, **Gougerot** a fungus which he placed under Nocardia, others again including **Ouzilleau** (1913), what were believed to be filarial elements. **Le Dantec** would explain these findings by suggesting that the causes may be multiple, but that juxta-articular nodules only develop where they do because these are sites of pressure. **Moncarey** supports this hypothesis, and believes that trauma determines the site of the lesions.

Egyedi (1925), writing upon changes in joints, tendon-sheaths and bursae due to yaws as observed among the natives of Nias, an island near Sumatra where 80 per cent of the population suffers from yaws, but where syphilis is unknown, believes that those lesions which develop in bursae give rise to juxta-articular nodules. He notes, as others have done, that the tumours may caseate, become calcified, or break down and discharge their contents. Old lesions he found resistant to salvarsan treatment, but those in an earlier state of evolution responded to these injections.

Gutierrez (1925) has recently described cases from Manila with histological findings, and has done well to call attention to the fact that juxta-articular nodules must be differentiated from the " subcutaneous fibroid syphilomas " described by **Weber** (1920), lesions which, as pointed out by **Goodman** and **Young** (1920), and referred to by **Fox** (1922), closely resemble juxta-articular nodules, but which can be distinguished histologically. It would appear probable, therefore, that lack of appreciation of these facts has led many observers among those quoted above to make an incorrect diagnosis, and that a diagnosis unsupported by histological examination in the absence of a history above suspicion, must remain a doubtful one. Both sets of lesions, so long as they have not reached an advanced stage of fibrosis, respond to treatment by salvarsan.

DU BOIS (1925) points out that, on the other hand, there is some danger of including under the term juxta-articular nodules a somewhat similar condition due to the cyst of Onchocercus, and demands a more careful differential diagnosis. He found true juxta-articular nodules common in the Middle Congo, but rare in Uélé and Kasaï. In Mayumbé, among 3,000 individuals examined, 1–2 per cent. showed the condition, and he points out that here yaws is widespread, that gangosa and other bony lesions of framboesial origin are common and goundou occurs, but is more rarely seen.

GANGOSA.

The etiology of this condition remains unsettled—it appears to be found in most if not in all endemic yaws areas, but it appears equally difficult to exclude syphilis, although the majority of writers include it as a manifestation of the former disease.

POWELL believes it to be syphilitic; BERCOVITZ (1922) reports the case of a woman in Hainan who admitted syphilis, but yaws could not be excluded. HUNT and JOHNSTON remark that this condition with very serious mutilation as seen in Guam is never seen in Samoa, but they record 6 cases of a lighter form from there. The disease is noted by WILSON in Haiti, and CRICHLOW in the Solomon Islands; it is said to be very common in the New Hebrides, by NICOLAS in Manila, VAN DRIEL (1922) in Sumatra, and GUTIERREZ in the Philippines, the two latter believing in a yaws pathogeny. More recently VAN DIJKE, BAKKAR and HOESEN (1925) have discussed cases observed among Javanese and they come to the conclusion that the condition is the result of yaws and not syphilis. In the Congo, DUBOIS found gangosa common in association with yaws, BEURNIER and CLAPIER found that every village had its one or two cases, and incline to a belief in syphilitic origin. HOLLAND reports a case in Baluchistan, WAAR a case in Borneo in a woman from a district where syphilis is very rare who had, however, had yaws. Neosalvarsan arrested the process, as it practically always does. In Tanganyika Territory, in 1922, at a clinic 1 case in 3,123 persons was seen. In Kenya, CALLANAN reports the finding of the condition in 4 per cent. of his adult cases of yaws. In 1923, 10 cases are reported from Moshi and 1 from Mwanza. Cases have been seen in various other parts of East Central Africa. MAXWELL says the disease is not uncommon in Formosa, where syphilis is rampant among certain elements of the community, but yaws unknown; he believes the condition to be a manifestation of syphilis. Gangosa has been reported in other parts of the world where yaws is said to be non-existent, but syphilis present, and the balance of evidence points to the latter disease being the chief or perhaps the only cause. NOGUE and LHUERRE (1925) describe the case of a Toucouleur in whom yaws could be excluded who suffered from a condition resembling gangosa together with arthritis of the right knee and osteo-periostitis of the left tibia.

SYPHILIS.

The wide distribution of syphilis among native races may to some extent be recognized from the geographical survey given above; at the same time it is very incomplete and reflects upon our lack of knowledge of this subject, and indicates to some extent that in many countries little or nothing is being done to tackle the problem. The figures are again vitiated by the impossibility in many cases of making a differential diagnosis from yaws, and by what appears to be a biased opinion of some observers in favour of one or the other disease. The prevalence of syphilis is often unrecognized in native communities which lie far away from centres of administration; cases do not seek treatment, but lie hidden in their villages, and they have to be sought for to be found. The establishment of native dispensaries and clinics for treatment in native areas will do much to cause these cases to emerge from their hiding places.

Symptomatology.—A most interesting comparative study of syphilis as seen in whites and negroes attending the Johns Hopkins Dispensary contributed by ZIMMERMANN (1921) should be compared with the paper by BAETZ (1914), and these observations on the American negro with those of NOGUE (1924) at Dakar in Senegal, PIJPER (1921)(1924) at Pretoria in the Transvaal, ALLAIN and AUGAGNEUR (1923) in Madagascar, MCARTHUR (1923) in Bechuanaland, and KEANE (1921) in Uganda. ZIMMERMANN'S summary dealing with 596 male+297 female whites, and 521 male+429 female coloured people is as follows:—

"Extragenital infection is relatively infrequent in negroes; among coloured males and females, the age of infection is respectively one and two years earlier than in white males and females. Secondary syphilis in the negro is characterized by marked polyadenitis, by frequent and severe osteo-arthritic symptoms, by the frequency of iritis, and by the high incidence of follicular and pustular syphilides. A striking racial peculiarity is the frequent occurrence of the "annular papular syphiloderm."

"Bone syphilis is the most frequent lesion of tertiary syphilis in the negro, exceeding neurosyphilis, which in white patients comprised almost half of all late manifestations. Cardiovascular syphilis is more frequent in the negro, with an incidence of two to one in coloured and white males, respectively. Stricture of the rectum and elephantiasis vulvae are extremely common in the coloured female. Leucoplakia is rare in the negro, tertiary adenitis is common.

"Neurosyphilis is more frequent in white patients than in negroes. The negro is less likely to develop tabes or paresis, while the large group of unclassed cases of cerebrospinal syphilis is approximately of equal frequence in the two races. In negroes it is especially likely to manifest itself in the form of cerebrospinal endarteritis."

LEVY (1923) refers to the commonness of cardio-vascular syphilis among negroes in Texas. BAETZ has analysed 500 cases of syphilis among a total of 8,226 patients showing thus 6 per cent. of admissions for syphilis among negroes in the Canal Zone. He points out that a macular syphilide on the body will not bring the patient for treatment, but a pustular eruption on the face will do so. 277 out of 366 applying for treatment did so on account of pain, chiefly nocturnal, in the larger joints in 136, in bones 47. Of 366 cases showing no evidence of other disease 114 had fever. Adenopathy occurred in 88 per cent., genital chancre or scar in 65 per cent., the scar, however, often being due to chancroid, as it is recognized that a large proportion of cases never give a history of a primary chancre; arthritis, periostitis, exostosis (probably meaning nodes) in 60 per cent.; cerebro-spinal lesions in 36 per cent.; skin manifestations in 28 per cent.; cardio-vascular disease in 10 per cent.; gummata and visceral infiltration in 5 per cent. Of 301 cases with bone lesions, 131 showed exostosis of tibia, 88 subacute arthritis and bursitis, 32 acute periostitis of sternum and tibiae, 24 of sternum, and 18 of tibiae alone. No cases of tabes or G.P.I. were seen, but palsies of cranial nerves were noted, cerebral haemorrhage or softening in 13, epileptiform seizures in 6, ataxia in 7. In 50 cases of cardio-vascular disease, there were 10 of aortitis, 25 of aortic regurgitation, and 15 of aneurysm.

NOGUE studied 400 cases in Senegal, and states that early ulceration in the throat is seldom seen; the native seldom seeks treatment for condylomata, but chiefly on account of the nocturnal headache and bone pains of the early tertiary period; polyadenitis is common. Tertiary lesions are often multiple, pleomorphic and widely scattered; cases may often show visceral lesions and cutaneous manifestations at the same time; cardio-vascular syphilis, especially aortitis, is common. No case of tabes or general paralysis was met with, but spastic paraplegia and hemiplegia were seen. The disease, he considered, is often acquired in childhood. Papular rashes predominated with a large proportion of a varioliform type. In 9 men and 9 women only were condylomata seen, about scrotum, vulva and anus. The commonest tertiary affection of the skin was a tuberculo-ulcerative lesion. Leucoplakia not uncommon; osteitis noted as follows: Nose 29 (also 6 cases of congenital disease), frontal 2, sternum 8, clavicle 4, radius 4, ulna 6, phalanges 7, tibia 21, fibula 2, femur 1.

PIJPER found that "rheumatism and neuritis" were the symptoms most complained of. Skin eruptions and condylomata in the secondary stage and later gummatous ulceration and disease of the nasal bones were most commonly seen. MACARTHUR seldom saw a primary chancre, but among children, who formed a large proportion of his cases, condylomata and tibial periostitis were common. In those over 14 years of age ulcerative gummatous lesions of the skin and naso-pharynx were most generally noted. No case of neurosyphilis was observed. This author believed that nearly all these cases were manifestations of the inherited disease, but it seems quite possible that they were child infections.

MACFARLANE (1923) among many thousands of cases of syphilis in Basutoland in 28 years only twice observed a primary genital chancre. He believes the disease is less malignant now than in former years

KEANE, without giving further details, furnishes the following figures for 1921 in Uganda: Primary and secondary cases 608 males and 321 females; tertiary and latent cases, 284 and 236; congenital disease, 84 and 130. GILKS (1924), alluding to the work at a venereal disease clinic in Kenya, makes no mention of congenital syphilis. He says among adults genital lesions are the rule, primary chancres among men and ulcerative lesions among the women, and only one case among some hundreds examined presented "anything like a secondary rash." The majority sought treatment on account of aches and pains. Among the children primary and secondary lesions of the genitals were commonly observed, but one is not informed whether these were sexual infections. Some observations by STONES in the Kavirondo district of Kenya are suggestive, but show some inconsistencies; one may, however, deduce that Hutchinson's teeth and interstitial keratitis were not seen, though expected, and that cases of neurosyphilis were not observed.

Davey's figures for Tanganyika Territory show 716 primary, 1,638 secondary, and 253 inherited disease, without mention of tertiary cases.

For Madagascar we have only the year figures by Allain (1924) :—

	1921.	1922.	1923.
Primary	63	387	785
Secondary	1,126	4,342	10,976
Tertiary	4,613	22,644	33,683
Inherited	592	3,281	6,133

From the colonies on the west coast of Africa there are practically no figures and no clinical observations to record. Louys, speaking of the Lower Ivory Coast, says that congenital syphilis is common among the children, who exhibit enlarged livers and spleens, dental irregularities, old iritis and large ulcers which respond to antisyphilitic treatment. Roy thinks that natives of North Africa have some immunity to syphilis; ocular lesions are uncommon; of 135 cases examined 16 had eye lesions, and of these he points out in only 1 was the posterior half of the globe affected. Nogue, who found 6·8 per cent. of 850 school children at Dakar showing evidence of hereditary disease, says that keratitis and skin lesions among them were rare; they suffered rather from rhagades, coryza, hepatic and splenic enlargement, osteitis, arthritis and hydrocephalus.

Fornara (1922) relates 3 cases of cardio-vascular syphilis in Congo natives. Lhuerre and Hudelet (1923) the case of an abdominal aneurysm in a Buganda with no history of syphilis, and negative Wassermann reaction. Briscoe (1918) reports a case of syphilitic hepatitis in a negro labourer, Panama Canal Zone. Leman (1921) believes negroes to be relatively immune to syphilitic affections of the pancreas compared with whites: Muller and Soekaton (1923) found among 459 necropsies on Javanese 19 cases of syphilitic orchitis. They believe that though syphilis is widespread it is benign in type among the Malays, on account of the rarity of congenital disease, of vascular manifestations and cases of neurosyphilis.

Wright (1924) mentions the occurrence of ainhum in a subject with syphilis, and believes that the relationship is worthy of further consideration.

Montel states, in regard to tabes and G.P.I., that though syphilis is widespread in Cochinchina these affections are very rare and practically never seen in North China. At Canton both occur, chiefly in southerners; at Singapore, Malays develop neither disease, but the Chinese do. On the other hand, syphilitic myelitis, spastic paraplegia and gumma of brain are as common as among Europeans. Chun (1924), among 689 cases of syphilis, 71 per cent. having secondary lesions, observed that rheumatic pains were most commonly complained of, but no case of so-called parasyphilis was seen in 4 years.

Thiroux (1922) mentions G.P.I. and transverse myelitis as met with in Annam. Gartner (1921), writing of the relative high incidence of G.P.I. in civilized as compared with uncivilized races, rather favours the theory, which others have also held, that explains the difference as due to intercurrent malarial infections in the uncivilized peoples. He holds that those who develop early marked skin lesions form "immunity bodies," which protect against G.P.I., while those who receive irregular early treatment develop "allergic weakness." Such a malarial theory receives, however, little support; in Madagascar it is definitely stated that malaria is severe in both children and adults yet 182 cases of G.P.I. were admitted to hospital in a year, though only 3 cases of tabes were seen in the same period.

It has been stated that there is a native type of infection which does not give rise to parasyphilis—a dermotropic virus as opposed to a neurotropic virus, but CHRISTIDI (1922) remarks that though syphilis is a very mild disease among the Persians, and parasyphilis is never seen among them, yet of 20 European men who were infected from Persian women 2 developed G.P.I.

SÉZARY and ALIBUT (1922) similarly relate the histories of two Europeans who contracted the disease from native women in North Africa—the syphilis being of what he calls "native type," but they both subsequently developed tabes, showing, he says, that the virus may be both dermatropic and neurotropic. BRUN and DELAMERE (1923) mention the case of an Arab woman of Tunis who developed a Charcot's joint—left knee—with tabes. WILSON (1922) has published 2 cases of tabes in Nigerian natives. MCNAUGHTON (1924) has published an interesting series of cases of epilepsy in natives of Kenya who responded to treatment with antisyphilitic remedies, and suggests that all the many cases of native epilepsy are syphilitic. It is an interesting speculation, but by no means proved.

Reference has been made under yaws to HARPER'S claim (1925) that irido-cyclitis, transverse myelitis, aortic aneurysm, optic atrophy, tabes and G.P.I. are manifestations of that disease, a claim which doubtless will never be substantiated, but rather go to prove that syphilis among the Fijians gives rise to these conditions. He bases part of his belief apparently upon the fact that a primary chancre has never been recorded; as has been shown above, this is not an uncommon observation in native races. THIEME (1925), in dealing with nearly 10,000 native admissions to hospital in 9 years in Samoa, saw no case of Hunterian chancre, and similarly believes syphilis to be rare there.

Treatment.—Little need be said here about the treatment of syphilis among natives. Such treatment must lie along lines which experience in Europe has taught are best, but modified according to local conditions, including staff and funds available. General considerations of treatment are dealt with in a review by E. J. BURKE, in LACAPERE and LAURENT'S recent book, in the writings of LEVADITI, and in the literature of this country, including the articles by HARRISON. What, perhaps, is not sufficiently recognized by practitioners in the tropics, is the necessity for grasping the principles underlying treatment, and the rationale of the use of particular drugs in particular cases. The susceptibility of many native races to mercury is well known; the liability to stomatitis from this cause and bismuth as well has been observed in many countries; it is referred to in reports from Kenya, Uganda and Tanganyika, but no detailed collection of cases has been published. There is nothing to show whether it is a true idiosyncrasy or a complication due to an already existing gingivitis or pyorrhoea, a condition found in 100 per cent. of some tribes, or to latent scurvy or spirochaetal infection of the mouth.

VAN DEN ZIJL (1922), HAZEBROEK (1922), and HERMANS (1922) allude to the toxicity of arsenic compounds in natives with liver insufficiency due to various co-existent conditions, protozoal and helminth infections, etc., and it would appear that even greater care than among whites is necessary in selecting cases for immediate treatment, and preparing others for subsequent treatment. No one, in dealing with native cases, records the prophylactic preliminary ingestion of glucose and the use of sodium thiosulphate as an antidote and prophylactic to poisoning by arsenic, bismuth and mercury does not seem to be widely known ; attention is drawn to articles by RAVAUT (1920), DENNIE and MCBRIDE (1924), SEMON (1924), HARRISON (1925) and BALFOUR (1924) upon this point.

The only paper dealing with the results of and accidents met with during treatment on anything like a large scale is by DECROP and SELLE (1923) using arsenobenzene derivatives in Morocco, wherein detailed observations on 80,000 intravenous injections in 10,000 individuals at Fez are given. It is a paper worthy of perusal by all those responsible for antivenereal campaigns among native races. There are some references in the annual reports from Uganda, Kenya and Tanganyika to the treatment there in use, but they are not detailed. The publication of statistics compiled from a long series of cases with detailed case notes and results of treatment would be most interesting.

The dangers attending the treatment of active cardiovascular syphilis with arsenical preparations are, of course, well known in this country, and LEVY concludes from the results of treatment with arsphenamin in 19 such cases among negroes in Texas that the dangers are very great indeed and the results nil.

A drug which may find a useful place in the treatment of syphilis as well as yaws, amoebic dysentery and malaria, is stovarsol, upon which a note appeared in the *Lancet*, 1925, Aug. 11, with references to literature. Tryparsamide has been favourably reported upon by LEES (1925) in the treatment of syphilis of the central nervous system, and might be worth a trial in the cases reported by MCNAUGHTON. LE ROY DES BARRES (1924) records three cases of secondary syphilis in Indochina treated with tablets of treparsol by mouth with excellent results, both clinical and serological, using the Baüer reaction.

In a recent article in the *Lancet* reference is made to the interesting fact that the llama alone among domestic animals has been found to be a carrier of syphilis, and to the investigations of MM. JAUREGUI and LANCELOTTI in Buenos Aires which go to show that the organism in the llama is identical with the treponema of man. The organism from each is infective for the other. The disease in the llama is etiologically and pathologically analogous with the human disease ; llamas develop late manifestations and tertiary affections, and die of general paralysis. The point of greater interest is, however, that llamas have been cured of their disease by inoculations of an attenuated virus. Further investigations will be carried out at the Pasteur Institute, Paris.

Serum Reactions.—The Medical Research Council Report No. 78 (this *Bulletin*, Vol. 21, p. 802) compares the Wassermann and Sigma reactions, the latter having many advantages, the chief disadvantage being that it is more laborious and more serum is required. OSMOND and MCCLEAN (1924) compare the Kahn and Wassermann tests in favour of the former and quote other authorities. The simplicity of the method has much to recommend it for workers in the tropics. G. STUART (1923) deals with results obtained in Palestine by Sachs-Georgi reaction, which he considers cannot replace the Wassermann reaction, but is useful within certain limits. HAZEBROEK (1924) gives his experiences with Sachs-Georgi and formol test of Gaté and Papacosta. Work at the Federated Malay States Institute for Medical Research (1921) goes to show that the formol-gel reaction is useless as compared with the Wassermann reaction. Webb (1922), in Uganda, finds the Sachs-Georgi test inferior to the Wassermann reaction, but useful in the tropics, where the latter is difficult to carry out. De Raadt thinks it as useful as the Wassermann reaction. Dawson and Smith (1923) consider the Dreyer Ward test as reliable as the Wassermann reaction, but more tiresome to carry out. Dubois (1922) reports on Levaditi's test in Congo natives, Diacono (1922) in North Africa on Ver[illegible] method, Polidori (1922) on modified Hecht-Bauer and Gaté-Papacosta tests. Mouchet, van Nitsen and Walravens (1921) tried the Bruck test, but report unfavourably, as it is often positive in malaria and remains positive in syphilis and yaws after the Wassermann reaction has become negative as the result of treatment.

Cochran (1923) makes some suggestions for performing the Sachs-Georgi test, and this method and the Wassermann reaction are discussed. Heinemann (1922) gives comparative results using Wassermann reaction, Sachs-Georgi and Meinicke's method among 2,000 Javanese labourers. He found conformity of precipitin reaction good, but conformity between the complement fixation reaction and precipitin reaction differs from the European standard and thinks this may be due to a malarial factor.

Perry (1923) advocates a staple haemolytic serum for use in tropical countries for Wassermann reactions.

There are references to results obtained by Wassermann reaction and Sachs-Georgi in malaria by Marcialis, quoted by *Lancet*, Ap. 19, 1924, and Harold (1922) offers an explanation of the positives so obtained.

In this summary, given at considerable length, of the literature which has come for review in the *Tropical Diseases Bulletin* during the past few years many shortcomings will be obvious. They result from the very limited information available from some countries, from the scanty details given, from want of investigation and report of statistics in many colonies, from looseness in terminology in description, from misrepresentation of facts from want of special training on the part of the observer, etc.

This summary may do something, as mentioned in the opening paragraph, to demonstrate how great is the want of exact knowledge of these two diseases, their distribution, their incidence, their clinical manifestations, their pathological differences, a means of differentiation and, lastly, the best methods of treatment and most satisfactory manner of gauging the effects of treatment.

REFERENCES.*

Alderson (1923), xxi, 794.
Allain (1924), xxii, 562.
—— & Augagneur (1922), *San. Supp.*, 1923, No. 1, 25.
—— & —— (1923), *San. Supp.*, 1924, No. 2, 109.
Andruzzi (1924), xxii, 548.
Argaud & Nénon (1922), xxi, 13.
Auden (1922), xx, 182.
Austen (1923), xxi, 364.
Baermann (1923), xxi, 369.
Baetz (1914), viii, 387.
Barker (1925), xxii, 549.
Bercovitz (1922), xx, 671.
Beurnier & Clapier (1923), xxii, 551.
—— & —— (1924), xxi, 367.
Bory (1924), xxii, 547
Botreau-Roussel (1925), xxii, 421–4.
—— & Cornil (1924), xxii, 651.
Bouffard (1925), xxiii, 20.
Brault (1915), viii, 238.
Briscoe (1918), xix, 429.
Broden & Bernard (1925), xxii, 799.
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Brun & Delamare (1923), xxi, 402.
Burga (1920), xvi, 470.
Cady & Engman (1924), xxii, 548.
Callanan (1925), M. D Thesis, Dublin.
Cange & Argaud (1922), xix, 602.
—— & —— (1923), xxi, 12.
—— & —— (1924), xxii, 241.
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Danet & Beurnier (1924), xxi, 797.
Davey (1914), v, 418.
Dawson & Smith (1923), xx, 516.
Decrop & Crambes (1923), xxi, 626.
—— & Salle (1923), xxi, 800.
Dekester & Martin (1923), xxi, 626.
Dennie & McBride (1924), *Jl. Amer. Med. Assoc.*, lxxxiii, 2,082–85.
Diacono (1922), xx, 518.
van Dijke, Bakker & Hoesen (1925), xxiii, 21.
—— & Oudendal (1922), xx, 288.
van Driel (1922), xx, 50.
Dubois (1922), xx, 517, 850. (1925), xxiii, 22.
Duren & Lejeune (1923), 1924, *San. Supp.*, No. 1, 54.
von Düring (1916), xv, 281.
Dye (1924), xxi, 798.
Egyedi (1925), xxiii, 17.
Esler (1925), xxii, 549.
Fallas & von Bülow (1925), xxiii, 16.
Federated Malay States, *Ann. Rep. Inst. Med. Res.* (1921), xx, 513.
Fischer (1925), xxiii, 21.
Foley & Parrot (1920), xix, 166.
—— & —— (1921), xix, 166.
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Galli-Valerio (1923), xxi, 627.
Gartner (1921), xx, 51.
Gavião Gonzaga (1923), xx, 841.
—— (1923), 1924, *San. Supp.*, No. 3, 231.
Gideon (1921), xx, 2.
Gilks (1923), xxi, 364.
—— (1924), xxii, 554.
Goodman & Traub (1923), xx, 842.
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Hazebroek (1922), xx, 653.
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Heinemann (1922), xx, 514.
Hendriks (1924), xxiii, 16.
Henggeler (1904), *Monatsch. f. prakt. Dermat.*, xl, 335.
Hermans (1922), xx, 653.
Hsu (1925), *Nat. Med. Jl. China*, xi, 27–31.
Hunt & Johnson (1923), xx, 840.
Jackson (1924), xxi, 484, 975.
Jahnel & Lange (1925), xxiii, 18.
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Leger (1923), xxi, 369.
—— (1925), xxiii, 23.
Lemann (1921), xix, 430.

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* References are to summaries in the *Tropical Diseases Bulletin* unless otherwise stated. Dates in brackets are those of the original papers and do not always correspond with the date of the respective *Bulletin*. The list does not include all the papers referred to by the reviewer. A fuller MS. list can be consulted at the Bureau.

REFERENCES—*continued*.

le Roy des Barres (1924), xxiii, 26.
Levy (1923), xx, 653.
Lhuerre & Hudelet (1923), xx, 654.
Louys (1920), xix, 795.
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MacCoy & Hollman (1916), viii, 239.
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—— & Soekaton (1923), xxi, 402.
Néel (1924), xxii, 161.
Neves (1923), xxii, 560.
Nicolas (1924), xxi, 795.
van Nitsen (1920), xviii, 251.
—— (1924), xxi, 797.
Noc (1911), *Bull. Soc. Path. Exot.* iv, 563.
Noel (1921), xviii, 251.
—— (1925), xxii, 800.
Nogue (1921), xx, 288.
—— (1922), xx, 288.
—— (1923), xxii, 562.
—— (1924), xxi, 799.
—— & Lhuerre (1925), xxiii, 24.
O'Connor (1923), xx, 891.
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Sellards, Goodpasture & de Leon (1923), xx, 836, 843.
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Spittel (1922), xx, 169. (1923), xx, 263.
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—— & van Hoof (1924), xxi, 797.
van der Zijl (1922), xx, 653.
Waar (1925), xxiii, 21.
Webb (1922), xx, 515.
Wilson (1924), xxi, 366.
Winckel (1923), *San. Supp.*, 1924, No. 2., 102.
—— (1923), xxi, 364.
Wright (1924), xxii, 562.
Ziemann (1923), *San. Supp.*, 1924, No. 1, 50–54.
Zimmermann (1921), xix, 427.

KALA AZAR.

Balasubramanian (T. S.). **Kala-Azar in the Ramnad District of the Madras Presidency.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. pp. 195–196.

In a recent paper Cunningham and Pundit (this *Bulletin*, Vol. 22, p. 685) called attention to an endemic focus of kala azar in the extreme south of India near Cape Comorin. The author of the paper under review now points out that another focus exists at Ramnad, a town on the east coast about 300 miles south of Madras and 150 miles north east of Cape Comorin. During 1922–1924 there came under his notice 28 indigenous cases of the disease. All came from villages on or near the coast.

C. M. Wenyon.

Michael (D. F.). **Note on the Incidence of Kala-Azar on the Pusa Estate.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. pp. 131–139. With 1 map.

The Pusa Estate is the Headquarters of the Imperial Department of Agriculture. It comprises 1,400 acres, of which 400 acres are residential areas for the various staffs, and the remainder fields for cultivation of crops and experimental purposes. The Estate, which is surrounded by villages inhabited by peasants, is situated at the bend of the River Boor Gandak, 6 miles from the Pusa Road Station of the Bengal and North-Western Railway. The paper records observations on cases of kala azar on this Estate The 69 cases were all in Indians, and of these 54 were in children. The infection was definitely a house one and associated with unhygienic modes of living. The spread by mechanical means appears to be worthy of consideration, though such a method of communication would not exclude an insect vector. The incidence of the disease is more marked between October and March during the dry season.

C. M. W.

Mazumdar (Benoylal). **A Report on 202 Cases of Kala-azar treated in Campbell Medical Hospital in 1923.**—*Calcutta Med. Jl.* 1925. July. Vol. 21. No. 1. pp. 10–13.

No unusual features were noted. The age incidence of the 202 cases was as follows: Under 2 years, 1; 3–10 years, 43, 16–30 years, 106; 31–50 years, 50; over 50 years, 2.

C. M. W.

Villain (G). Note sur le kala-azar du Honan (Chine centrale). [**Kala Azar in Honan.**]—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 669–676. With 1 text fig. [1 ref.]

A description of 7 cases of kala azar in Honan, China, where the disease is already known to be endemic. An examination of numerous ulcers has failed to demonstrate the existence of oriental sore in this locality, though Phlebotomus occurs there during the hot season.

C. M. W.

Kassirsky (J. A.), **Mosheiko** (W. M.) & **Fedulow** (A. W.). Ueber Leishmaniose bei Erwachsenen in Turkestan. **[illegible] in Adults in Turkestan.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Aug. 1. Vol. 29. No. 8. pp. 368–379.

This paper gives a description of 10 cases of kala azar patients varying in age from 14 to 34 years. Treatment was carried out with tartar emetic and neosalvarsan. It was successful in 8 of the cases.

C. M. W.

Burnet (Et.) & **Masselot** (F.). Deuxième cas de kala-azar chez l'adulte en Tunisie. [**Kala Azar in the Adult in Tunis.**]—*Bull. Soc. Path. Exot.* 1925. May 13. Vol. 18. No. 5. pp. 397–399. [3 refs.]

—— & ——. Un cas tunisien de kala-azar de l'adulte.—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1925. June 18. Year 41. 3rd Ser. Vol. 49. No. 21. pp. 899–903. With 3 charts in text. [3 refs.]

——, ——, **Calamida** (F.) & **Ortona** (C.). Trois cas de kala azar chez l'adulte en Tunisie.—*Arch. Inst. Pasteur de Tunis.* 1925. July. Vol. 14. No. 3. pp. 331–339. With 6 charts in text.

The first and second of these papers describe the second case of kala azar in an adult in Tunis. The patient was a woman 39 years of age who was a nurse at the French Civil Hospital. The third paper records another similar case in a man 22 years of age, and gives some details of the three adult cases noted in this locality. The first case in an adult in Tunis was noted a few months ago (this *Bulletin*, Vol. 22, p. 688).

C. M. W.

Christophers (S. R.), **Shortt** (H. E.) & **Barraud** (P. J.). **Further Observations on the Feeding of Sandflies,** *Phlebotomus argentipes*, **on Cases of Indian Kala-Azar.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. pp. 159–165.

The experiments recorded in this paper are a continuation of those previously noted (this *Bulletin*, Vol. 22, pp. 193 and 683). Of 53 flies fed on kala azar cases 14 showed flagellate infections. The latest time after feeding that any fly found positive has been dissected is the 5th day. The most noticeable feature of these further experiments has been the very heavy infections of a number of 5th day flies. Furthermore, many of the flagellates are attached to the gut wall by their flagella, a condition commonly seen in natural flagellate infections of insects. In the 5th day flies the infection is either a heavy one or does not occur at all. As in the first series of experiments, the flies as a rule feed only once and die on the 5th day. A few flies have, however, been induced to feed a second time on the 4th day and one of these has survived to the 7th day. In a note added to the paper it is stated that in one 5th day fly the flagellates had extended into the hinder end of the pharynx. They were present in considerable numbers in the oesophagus. In another fly dissected on the 6th day 3 flagellates were seen attached by their flagella to the membrane on the anterior surface of one of the maxillae. Several flagellates were also detected in the loose membrane of the labium. It is recognized that the flagellates may have attached themselves during dissection.

C. M. W.

Lloyd (R. B.), Napier (L. E.) & Smith (R. O. A.). **The "Blood Meal" of *Phlebotomus argentipes* identified by Precipitin Antisera.**—*Indian Jl. Med. Res.* 1925. Apr. Vol. 12. No. 4. pp. 811–817. [5 refs.]

The local occurrence of kala azar in one particular area of Calcutta and not in another naturally suggested a comparison of the two areas in respect particularly of their animal environment. In both areas the soil was polluted by droppings of domestic animals; in the "endemic" area the domestic animals were mainly fowls, ducks and animals other than cows, few cows being kept; in the "non-endemic" area (a Hindu area) they were mainly cows. In both areas species of Phlebotomus were existent, and among them *P. argentipes*—the only species that could be got to feed on man and the one that was found easy to infect in the laboratory when fed on kala azar patients. The Method of Difference could not therefore explain the epidemiology, unless some difference in the behaviour of *P. argentipes* could be discovered in the two areas.

One of the present observers (L.E.N.) suggested that *P. argentipes* might breed in soil promiscuously polluted by animals, but might feed *by preference* on one particular species of animal found abundantly in one area and not in the other, only feeding on man when that preferable species (cow) was not—or not easily—obtainable. Actual observation went some considerable way towards confirming this hypothesis: *P. argentipes* was found in both areas—though most abundantly in the "endemic" area, but in the "non-endemic" area—the Hindu area, where the domestic animals were mainly cows—it was observed to "remain in the neighbourhood of the cows, depending entirely on them for food, and seldom, if ever, to invade the upper rooms" where the people slept.

The experiments now described go very much further in confirming the hypothesis that *P. argentipes* feeds by preference on cows, and falls upon man only when cows are in default. Fifty-two individuals of this species were captured—some in situations where the domestic animals did not include any cows; others where there were cows and men; and others where there were cows alone—and the blood in 39 of these was identified by means of antiprecipitin sera.

In 10 observations out of the first category human blood alone was demonstrated in 6, human and bovine in 1, and blood that was neither in 3. In 16 observations of the second category bovine blood alone was demonstrated in 14, bovine and human in 1, and human blood alone in 1. In the observations of the third category bovine blood was demonstrated in all but 1, and human blood in none.

A. Alcock.

Christophers (S. R.), Shortt (H. E.) & Barraud (P. J.). ***Culicoides* and Kala-Azar in Assam.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. pp. 175–176. [2 refs.]

In Assam *Culicoides macrostoma* has been found to attack man. Of a number of these flies fed on kala azar cases 48 survived for 72 hours, and 2 to the fourth day. Dissection of these did not reveal any flagellate infection, though they had fed on the same cases that gave an average of about 25 per cent. positive finds in the case of *Phlebotomus argentipes.*

C. M. W.

Shortt (H. E.) & Swaminath (C. S.). **Experiments to decide whether the Bed-Bug** *Cimex hemiptera,* **Fabr., can transmit Indian Kala-Azar.**—*Indian Jl. Med. Res.* 1925. July, [illegible] 13. No. 1. pp. 143–147. [2 refs.]

Attempts were made to transmit kala azar to 25 monkeys by means of bed bugs fed on kala az[illegible]ases. To each monkey was allotted a large test tube containing [illegible]an average 150 bugs in various stages of development. As casualties occurred in the tubes new bugs were introduced to replace those that had died. The procedure was to invert the tube on the skin of a kala azar case one or more times till the bugs had fed to repletion, and then, after the lapse of a few days, to allow them to feed on a shaved area on the abdomen of the monkey. After one or more feeds on the monkey the bugs were again fed on a case of kala azar. The time occupied in these experiments was from 6th December, 1923 to 9th March, 1925, and most of the monkeys were subjected to repeated biting for a period of about a year. In the case of 13 monkeys the experiments occupied from 317 to 392 days, the number of exposures to bites varying from 48 to 67; in the case of 5 monkeys it occupied from 218 to 290 days, the exposures varying from 26 to 41, while in the case of the remaining number the experiments were of shorter duration. In no case did a monkey become infected, though it was shown that 78 per cent. of this kind of monkey (*Macacus rhesus*) becomes infected by direct inoculation. The faeces passed by the bugs in the tubes were utilized for another experiment. On 112 occasions during 383 days the faeces of approximately 600 bugs which had fed on kala azar cases were fed to a monkey without any infection occurring. Between April, 1923, and March, 1924 cultures were made from the entire gut of 138 bed bugs taken from the bedding of kala azar cases. The cultures were uniformly negative.

C. M. W.

Nicolle (Charles) & Anderson (Charles). Recherches expérimentales sur le mode de transmission du kala azar. [**Experiments on the Mode of Transmission of Kala Azar.**]—*Arch. Inst. Pasteur de Tunis.* 1925. July. Vol. 14. No. 3. pp. 264–277. [2 refs.]

The experiments recorded in this paper deal with attempts to transmit kala azar from dog to dog by means of bed bugs. A virus was used which was proved to be capable of passage from dog to dog by inoculation. The experiments were of two kinds. In the first, two cages from which bed bugs could not escape were used. In each cage in which bed bugs were placed a heavily infected dog was kept for a week. The dog was then replaced by two young healthy dogs, which remained there for a week. The weekly alternation of infected and uninfected dogs was kept up for five to six months, fresh bugs being introduced from time to time, but it was found that the environment did not suit them, for they quickly died and disappeared. No infection of the healthy dogs occurred, but owing to the behaviour [illegible] bugs little reliance is placed on the experiment. In the second experiment batches of bugs were fed on infected dogs on the 1st, 3rd, 6th and 15th day of the experiment, and on 2 uninfected young healthy dogs on the 5th, 7th, 10th, 12th, 14th, 17th, 19th and 21st days. On the 7th, 10th, 14th, 19th and 21st days a number of bugs were crushed and the material smeared on a shaved and scarified area of skin, while others were opened with a needle and fed to the dogs. The experiment was repeated on 17 occasions during the course of 4 months. Each dog was bitten 2,150 times, was smeared with material from 130 crushed bugs and ate 320 bugs. The experiment was entirely negative and the authors conclude that even if the bed bug be capable of transmitting kala azar occasionally from dog to dog or from dog to man it cannot be regarded as the vector of the disease. Similarly, elaborate experiments were carried out by the authors with fleas (this *Bulletin*, Vol. 22, p. 194).

C. M. W.

GREIG (E. D. W.) & CHRISTOPHERS (S. R.). **Infection of a Monkey (*Macacus rhesus*) with the Parasite of Indian Kala-Azar following the Introduction of Infective Material into the Lumen of the Small Intestine.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. pp. 151–157. [8 refs.]

A mixture of cultural forms of *L. donovani* and fresh parasites from the spleen of a case of kala azar was introduced into the upper part of the jejunum of a young monkey. A special technique had been devised to prevent contamination of the peritoneal cavity and wound with the organisms. Four months later the monkey was killed and found to be infected. Four other experiments of the same kind were made, but though it could not be definitely stated that they were free from criticism, no infection occurred. In the positive case the infection must have taken place through the intestinal mucosa.

C. M. W.

SHORTT (H. E.) & SWAMINATH (C. S.). **Systemic Infection of a Monkey (*Macacus rhesus*) by Intradermal Inoculation of Spleen Puncture Material from a Case of Indian Kala-Azar.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. p. 149. [1 ref.]

A monkey was inoculated intradermally in the right eyebrow with about 0·5 cc. of diluted spleen puncture material from a case of kala azar. The monkey a year later appeared to be in good health, and was killed. Apart from an obvious enlargement of the spleen the organs appeared normal. Parasites were numerous in the spleen, less so in the liver, and were not found microscopically in the bone marrow. Cultures, however were obtained from all these tissues.

C. M. W.

CHRISTOPHERS (S. R.), SHORTT (H. E.) & BARRAUD (P. J.). **Our Present Knowledge regarding the Transmission of Kala Azar in Nature.**—*Proc. Assam Branch Brit. Med. Assoc. Ann. Meeting, Jorhat, 2nd Mar., 1925.* pp. 22–28. [8 refs.]

This paper discusses the possible methods of spread of kala azar and concludes by stating that *Phlebotomus argentipes* remains the chief suspect, as it is the only known insect in which the parasite multiplies with ease.

C. M. W.

GRAHAM (J. D.). La commission du kala-azar dans l'Inde Britannique. **[The Kala Azar Commission in British India.]**—*Bull. Office Internat. d'Hyg. Publique.* 1925. May. Vol. 17. No. 5. pp. 512–516. [1 ref.]

An account of the constitution of the Kala Azar Commission now working in India, its chief objective, the discovery of the method of transmission of the disease and the progress made in experiments with *Phlebotomus argentipes*.

C. M. W.

MANSON-BAHR (Philip). **The Technique of Splenic Puncture in the Diagnosis of Kala-Azar.**—*Lancet.* 1925. July 11. pp. 70–71.

When the operation of spleen puncture for diagnosis of kala azar is done the author administers 1/100 gr. atropine about an hour before the operation, infiltrates the puncture site with novocaine and partially anaesthetizes the patient at the operation. The fluid in the needle is blown on to a slide and examined in a dark room by means of an electric torch held below the slide. The particles of spleen tissue are picked out and smeared on slides. In this way dilution of the material with blood is avoided and the parasites are obtained in greater concentration.

C. M. W.

PRICE (J. Dodds) & STRICKLAND (C.). **The Significance of the** *Splenic-Index* **in** *Kala-Azar* **Endemic Areas.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. pp. 1–6. [3 refs.]

The question whether enlargement of the spleen due to causes othe than malaria can upset the accepted rule that a spleen index is an indication of the intensity of malaria is an important one, especially in kala azar areas. The authors of the paper find that rare pathological conditions are of no importance in using the spleen index nor is kala azar, unless the clinical signs of the disease are well-marked. In taking a spleen index for malariometry in kala azar areas, if the cases with well-marked symptoms of kala azar are excluded the spleen-index taken in conjunction with a parasite-index will give reliable information regarding the intensity of malaria. The conclusions are based on observations made in Assam tea gardens.

C. M. W.

LING (W. P.). **Further Observations on the Fundus Oculi of Kala-Azar Patients.**—*China Med. Jl.* 1925. Aug. Vol. 39. No. 8. pp. 681–683. [2 refs.]

The author has already drawn attention to the occurrence of retinal haemorrhages in cases of kala azar which have marked secondary anaemia. The haemorrhages occur in all the layers of the retina. In the cases which were observed long enough there was complete absorption of the extravasated blood, the essential factor being diminution of the secondary anaemia.

C. M. W.

JEMMA (Rocco). A propos du kala-azar infantile dans la région méditerranéenne. [**Infantile Kala Azar in the Mediterranean Area.**]—*Paris Méd.* 1924. Aug. 23. Vol. 14. No. 34. pp. 155–159.

A remark by GIRAUD and ZUCCARELLI, who drew attention to the presence of kala azar in endemic foci in the South of France in Nice and Marseilles, to the effect that the treatment is still in its experimental stage, and that it is of importance to discover an antiparasitic which is truly active in order to combat the disease, leads the author of the paper under review to publish a protest. From his experience of over 600 cases of the disease in Italy, and the remarkable reduction in the mortality rate since the introduction of tartar emetic treatment, he is able to assert that the antimonial treatment is truly specific. The rules for the treatment of children have already been laid down by the author in his numerous publications on the subject, and he feels that the treatment employed by the observers named was so open to criticism that their statement regarding the inefficacy of tartar emetic was quite unjustified. The basis of his treatment is the bi-weekly injection of 1 per cent. solution of tartar emetic, commencing with a dose of 1 to 2 cc. till a maximum dose of 3 to 4 centigrams of the drug is given to children under 3 years of age, and a dose of 4 to 5 to children older than this. Intramuscular injections must be avoided, as also the substitution of other antimonial derivatives. If the treatment is carried out without intermission a cure can be assured in the great majority of cases in two to three months As regards GIRAUD and ZUCCARELLI'S cases the first was treated when *in extremis* with intravenous injections of a 2 per cent. solution of tartar emetic; the second after 4 intramuscular injections of the drug developed necrosis of the muscles and treatment was abandoned; the third case had 10 intravenous injections of stibyl and died of broncho-pneumonia during a rest from treatment; the fourth was similarly treated and died of the same complication, while the fifth was at first treated intramuscularly with tartar emetic, then with arsenobenzol, and finally, when the end was near, with intravenous tartar emetic. The author feels that the failure cannot be attributed to the drug.

C. M. W.

PARADISO (F.). Due casi di Kala-azar infantile a sintomatologia ed associazioni morbose non frequenti. [**Two Cases of Infantile Kala Azar with Unusual Complications.**]—*Pediatria.* 1925. Nov. 15. Vol. 33. No. 22. pp. 1228–1236. [18 refs.]

Two cases of infantile kala azar which were being treated with injections of tartar emetic in Catania appeared to respond very badly to the drug. It was found that malarial parasites were present, though none had been found before the treatment was commenced. One child died and the other was removed from hospital by the parents.

C. M. W.

SMYLY (H. Jocelyn). **Experiments on the Administration of Tartar Emetic by Various Routes.**—*Proc. Soc. Experim. Biol. & Med.* 1924. Dec. Vol. 22. pp. 201–203.

Intramuscular injections of tartar emetic in rabbits invariably cause necrosis and haemorrhage. In one human being it caused pain and swelling. Intraperitoneal injections in rabbits caused so much irritation that it was not tried on human beings. Three cases of kala azar treated by rectal injections of the drug did not improve. The results of the investigation indicate that the intravenous route is the only one practicable for the administration of tartar emetic.

C. M. W.

BRAHMACHARI (U. N.) & JUDHISTHIR DAS. **Chemotherapy of Antimonial Compounds in Kala-Azar Infection. Part XV. Further Observations on Certain Derivatives of P-Amino-Phenyl-Stibinic Acid.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. pp. 17–19.

—— & MAITY (Bibhuty Bhusan). **Part XVI. Observations on Blood Culture of Kala-Azar Patients on NNN Medium during 1922-24.**—*Ibid.* pp. 21–24.

In a series of 440 cases of kala azar in which culture from the peripheral blood was attempted a positive result was obtained in 426. Culture from spleen puncture material of 190 of the cases was positive in all. In a second series spleen puncture showed parasites in 186. Culture from the peripheral blood was attempted in 160 of these cases with 154 positive results and culture from spleen puncture material in 170 cases with a positive result in all.

After the administration of urea stibamine and control of the peripheral blood by the culture method it was found in a series of 37 cases that the blood became negative in periods varying from 35 hours to 34 days. In 73 per cent. of the cases the blood became negative within 10 days.

C. M. W.

BRAHMACHARI (Upendra Nath). **Chemotherapy of Antimonial Compounds in Kala-Azar Infection. Part XVII. Further Details of the Preparation of Urea Stibamine.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. pp. 111–112.

The process described involves: (1) Preparation of stibacetin; (2) hydrolysis of stibacetin to p-aminophenylstibinic acid, the sodium salt of which is stibamine; and (3) conversion of the latter to urea-stibamine. Parts (1) and (2) are already well-known. Part (3), which is the important part, is not given in sufficient detail to be useful, and adds nothing of importance to the description published already by the author (*Indian Jl. Medical Research*, 1922, Vol. 10, p. 508).

T. A. Henry.

DAS (Sudhir Kumar). **" Stibosan " (von Heyden " 471 ") in Private Practice.**—*Indian Med. Gaz.* 1925. Sept. Vol. 60. No. 9. pp. 425–426.

An account of 12 cases of kala azar treated with von Heyden " 471 " in private practice. All the patients who have been under observation for 3 to 14 months since the last injection are in sound health. Emphasis is laid on the rapidity with which the fever is checked, the short duration of the course of treatment, the rapid reduction in the size of the spleen, and freedom from harmful effects.

C. M. W.

NAPIER (L. E.). **Stibosan (von Heyden "471").**—*Indian Med. Gaz.* 1925. Oct. Vol 60. No. 10. pp. 466–467.

In consequence of repeated letters asking for details regarding the use of stibosan (von Heyden "471") in the treatment of kala azar, the author has given the following directions. The drug is obtainable in sealed ampoules containing 0·2 or 0 3 gram The required dose should be dissolved in sterile distilled water to make a 5 per cent solution, *i e*, 0·05 gram will require 1 cc, 0 1 gram 2 cc, and so on The solution should not be boiled and should be prepared freshly. An ampoule opened two years ago and kept in an ill-corked bottle at the ordinary Calcutta room temperature had not undergone any chemical change or increased in toxicity

The dose for strong adults can be 0 2 gram at the initial dose, and 0·3 gram subsequently Debilitated adults can be given 0 15 gram and 0·25 subsequently, while exceptionally weak patients should not have a larger initial dose than 0·05 gram Children tolerate relatively large doses At 3 years of age the maximum dose is 0·1 gram, at 9 years 0 2 gram, and from 12 onwards 0 25 gram In children between 1 and 2 years of age intramuscular injections up to 0·1 gram can be given without causing more than slight local pain A total of about 3 grams for an adult weighing 100 lb is a little above the average sterilizing dose The routine course of injections will be from 11 to 15 These should be given twice or three times weekly Definite ascites should be a contra-indication to the use of the drug, chest complaints, traces of albumen in the urine, and diarrhoea are not contra-indications If jaundice occurs injection can be discontinued for a short time

The advantage of stibosan is that, in common with other pentavalent preparations of antimony, it makes it possible to effect a cure in about 12 injections instead of 30 or 40, which are usually necessary with antimony tartrate The severe febrile reaction, the distressing cough, and the vomiting which so commonly follow administration of the tartrate are practically unknown when stibosan is used Furthermore, it is stable, and does not change in contact with the air, so that it is not necessary to open a new ampoule each time a dose is given Bottles containing 10 grams are supplied for hospital use, and the necessary amount for the day s doses can be weighed out and dissolved, the rest being kept for the next occasion

C M W.

RODRIGUES (Sebastian L) **A Plea for Immuno-Therapy in Kala-Azar.**—*Calcutta Med Jl* 1925 May Vol 20 No 11 pp 421–431

In this article the author suggests that kala azar should be treated not only with drugs, but with a potent vaccine capable of developing immune bodies He argues from what he supposes to be the conditions in other Protozoal diseases, amongst which he includes rabies, smallpox, relapsing fever and syphilis, though spirochaetes are probably not Protozoa at all, while the causative organisms of the first two are unknown Many of the statements he makes in support of his contentions are far from accurate, but, nevertheless, if such a vaccine as the one the author visualizes could be produced, it would undoubtedly be of value in the treatment of the disease.

C M W.

Drbohlav (Jaroslav J.). **Studies on the Relation of Insect Herpetomonad and Crithidial Flagellates to Leishmaniasis. i. Inoculation of Mammals with Insect Flagellates. ii. The Specificity of the Various Insect Flagellates for Certain Hosts, as indicated by Cross Infection Experiments. iii. Cultivation Requirements.**—*Amer. Jl. Hyg.* 1925. Sept. Vol. 5. No. 5. pp. 580–597. [22 refs.]; pp. 599–610. With 10 figs. on 1 plate. [12 refs.]; pp. 611–621. [7 refs.]

i. The author has attempted to infect about 150 animals (mouse, rat, rabbit, dog, monkey and frog) with *Leptomonas ctenocephali* of the dog flea, *Crithidia gerridis* of the water strider, and *Herpetomonas muscarum* of flies (*Lucilia*). He has also inoculated plants of the genus Euphorbia with *L. ctenocephali, H. muscarum, Leishmania infantum* and *Trypanosoma rotatorium*. From the inoculated animals flagellates could be recovered up to three hours after inoculation and some rounded forms could be seen after six hours. In no case could flagellates be found in the plants, though it was shown they would remain motile for five days in the latex. In none of the animals or plants inoculated was there any indication of multiplication of the flagellates. The experiments have been carried out with the greatest care. Cultures have been repeatedly made from the blood and organs and careful post-mortem investigations made. It is concluded that the experiments indicate no etiological relationship between the insect herpetomonads used and leishmaniasis.

ii. The author has demonstrated what has long been suspected, viz., that the flagellate infections of the dog flea due to *Leptomonas ctenocephali* are due to larval infections acquired by the larvae ingesting the faeces of infected adults. The infection persists through the pupal stage and appears in the newly-hatched adult. Larvae can also be infected by feeding them on cultural forms of the flagellate. Uninfected adult fleas can also be infected with *Leptomonas ctenocephali*, but not with *Leishmania infantum, Herpetomonas muscarum* or *Crithidia gerridis*. Similarly, flagellate-free *Gerris remigis* did not become infected with *L. ctenocephali, L. infantum* or *H. muscarum*. Attempts to infect flies with *L. ctenocephali, L. infantum* and *C. gerridis* failed. On the other hand species of fly belonging to the genera *Musca, Fannia* and *Lucilia* all acquired infections with *H. muscarum*.

iii. From his experiences with the cultivation of flagellates in N.N.N. medium, the author was led to adopt a modified medium. The agar base is prepared as in N.N.N. medium, except that 0.3 per cent. potassium biphosphate was added as a buffer and the reaction adjusted to pH 6·6. The blood, which was either defibrinated or citrated, was diluted with an equal volume of Locke's solution containing 0·3 per cent. of glucose. To the melted agar in the tubes was added half the volume of diluted blood. The water of condensation, which separates after solidification, has a pH of 6·8. The requirements of different flagellates showed that *Leptomonas ctenocephali* grew best at pH 6·8, *Herpetomonas muscarum* at pH 5·4 to 5·6, and *Leishmania donovani* at pH 7·0. Growth is always greater on the surface of the agar above the water of condensation than in the liquid itself. Cultures of *L. ctenocephali, L. donovani*, and a trypanosome of the frog were kept for a year without subculture, after which successful subcultures were obtained.

C. M. W.

CHRISTOPHERS (S. R.), SHORTT (H. E.) & BARRAUD (P. J.). **The Effect of Salt Solutions of Different Concentrations on the Parasite of Indian Kala-Azar.**—*Indian Jl. Med. Res.* 1925. July. Vol 13. No. 1. pp. 177–182. [4 refs.]

It is concluded that, though in the flagellate stage the parasite of kala azar is fairly resistant to changes in osmotic pressure, and able to develop in relatively low salt concentration, there is no indication of any probability that it can propagate in, or even withstand, the action of water. Milk, though suitable as regards salt concentration, does not appear to be a suitable culture medium.

C. M. W.

CHRISTOPHERS (S. R.), SHORTT (H. E.) & BARRAUD (P. J.). **Temperature in Relation to Culture of** *Herpetomonas donovani* **on NNN Medium.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. pp. 167–171. [4 refs.]

An investigation on the temperature at which *L. donovani* will develop in culture has shown that in Assam it varies between 16° C. and 34° C. Heavy growths were obtained at temperatures of 22° C. to 30° C. The temperature conditions of Assam are such that culture at room temperature could take place during the greater part of the year.

C. M. W.

MAYER (Martin). Versuche mit Kala-azar-Erregern. [**Experiments with** *L. donovani.*]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Oct. 15. Vol. 29. No. 10. pp. 507–513. [18 refs.]

Obtaining a virus from a case of Indian kala azar the author has maintained *L. donovani* in mice for a period of eight and a half years, during which only 8 passages were made. The duration of the infection in the mice varied from 97 to 724 days. There did not appear to be any loss in virulence in successive passages. From a second case of Indian kala azar parasites were cultivated from the peripheral blood, and with these two successful passages in mice were made. The strain then died out. The culture from the peripheral blood was made by Row's method. In each of a series of tubes are placed 6 cc. of a solution of 2 per cent. sodium citrate in 0·85 per cent. sodium chloride. To each is then added 1 cc. of blood from a vein. After mixing the tubes are allowed to stand at room temperature (about 22° C.) for two hours. By means of a pipette the deposit of cells in each tube is transferred to one or two tubes of N.N.N. medium. By this technique every tube inoculated gave a growth of flagellates.

An attempt to transmit kala azar from one of the cases to mice by means of 30 *Ornithodorus moubata,* and 11 larvae and 3 nymphs of *Triatoma infestans* failed.

C. M. W.

PARROT (L.) & LESTOQUARD (F.). Sur quelques détails de la structure des *Leishmania.* [**Some Details of the Structure of the Leishmania.**]—*Bull. Soc. Path. Exot.* 1925. July 8. Vol. 18. No. 7. pp. 541–546. With 19 figs. on 1 plate & 1 coloured plate. [7 refs.]

By a special technique the authors have been able to demonstrate the presence of the rhizoplast in various leishmania. This structure

is frequently seen in ordinary dried films stained deeply by Romanowsky stain, but the technique recommended shows that it is constantly present.

The films are fixed in Schaudinn's alcoholic sublimate solution or in alcoholic iodine. If the first has been used, after 10 minutes' fixation they are transferred to the second. The films are then washed free of iodine in 95 per cent. alcohol, after which they are dried. They are then immersed in horse serum for 10 minutes and again dried in the air, after which they are stained with Giemsa stain. A plate shows the appearance of the rhizoplast and the method of its duplication when the parasite commences to divide. It is believed that the rhizoplast itself splits longitudinally, but the figures might be taken as indicating the formation of a new rhizoplast as an outgrowth from that half of the divided blepharoplast which has not the old rhizoplast attached to it. Attention is also called to the presence in films of various degenerate leishmania. These, which have been noted previously by various observers, consist of shells, which evidently represent the periplast of the parasites In some the kinetoplast and rhizoplast, and even the nucleus, are still visible

C. M. W.

NICOLLE (Charles) & ANDERSON (Charles). L'immunité dans le kala azar expérimental du chien avec quelques données sur l'évolution de la maladie chez cet animal. Immunité naturelle et immunité par première atteinte naturelle. [**Immunity in Experimental Canine Leishmaniasis. Course of the Disease in the Dog.**]—*Arch. Inst. Pasteur de Tunis.* 1925. July. Vol. 14. No. 3. pp. 278–287. [2 refs.]

The maintenance of strains of *Leishmania donovani*, whether of human or canine origin, has shown that the animals usually recover after a few months, though intense and sometimes very intense infections can be demonstrated by examination of the bone marrow during this period. Dogs, however, vary in their response to inoculation. Certain animals acquire an acute and fatal form of the disease. Others pass into a cachectic condition and die at a time when recovery would be expected. There do not appear to be any cases of natural immunity. Animals which have completely recovered are immune to further inoculations, but it is not possible to state the duration of this immunity. In practice, if it is desired to maintain a strain of *L. donovani* in dogs, 4 to 6 animals should be inoculated on each occasion, and a similar number inoculated two and a half to three months later from the animal which shows the most intense infection.

C. M. W.

CÉSARI. La leishmaniose canine en France. [**Canine Leishmaniasis in France.**]—*Recueil Méd. Vét.* 1925. Apr. 30. Vol. 101. No. 8. pp. 177–179.

ROZIER (L.). Notes sur la leishmaniose canine.—*Ibid.* pp. 179–182.

For some years the dogs of Grasse, in Alpes Maritimes, South of France, have been liable to a disease of unexplained origin. The author of the second paper sent to Césari the femurs from two dogs, and in the bone marrow of both leishmania were found. It is evident that canine kala azar is a common disease of these animals in this locality. In France the disease in dogs has previously been noted only in Marseilles (see this *Bulletin*, Vol. 4, p. 398).

C. M. W.

MARZINOWSKY (E. J.). Zur Frage der Parasitologie und pathologischen Anatomie der Hundeleishmaniose. **[Parasitology and Morbid Anatomy of Canine Leishmaniasis.]**—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 234–239. With 6 figs. on 2 plates.

This paper, without describing anything new, gives an account of natural and experimental kala azar in dogs as observed in S.E. Russia. A detailed description of a dog observed by the author in Bokhara in 1921 shows that this animal had a generalized leishmaniasis, as well as ulcerating lesions of the skin in which numerous parasites occurred. Sections of the margins of an ulcer showed that the infiltrating tissue was composed of epithelioid cells and fibroblasts, in both of which the parasites were found. They showed a tendency to be heaped round the nuclei and in the elongate fibroblasts they were arranged in rows, producing an appearance resembling the leishmania forms of *Trypanosoma cruzi* in muscle fibres.

C. M. W.

ROW (R.). **Canine Leishmaniasis in Bombay.**—*Indian Med. Gaz.* 1925. July. Vol. 60. No. 7. pp. 317–318. With 3 text figs.

The paper describes the case of canine leishmaniasis in a Punjab dog, which was noted by AVARI and MACKIE (this *Bulletin*, Vol. 22, p. 204). There were extensive ulcers on lips, ears, nose and inner canthus of the eye. On the inner surfaces of the ears were a number of non-ulcerated nodules, which resembled those which the author saw in a case of cutaneous leishmaniasis in an Indian soldier returning from Palestine during the War. An attempt made to obtain cultures of the parasites from the dog did not succeed. Mice were not infected by intraperitoneal injections, but two dogs inoculated in the skin of the ear contracted the disease. The author seems to think that the results of these experiments and the fact that the parasites appear larger than *L. tropica* justify the recognition of a distinct species.

C. M. W.

ADLER (S.) & THEODOR (O.). **The Experimental Transmission of Cutaneous Leishmaniasis to Man from** *Phlebotomus papatasii.*—*Ann. Trop. Med. & Parasit.* 1925. Sept. 30. Vol. 19. No. 3. pp. 365–371. [23 refs.]

Working in Palestine, the authors have found a *Herpetomonas* (*Leptomonas*) in *Phlebotomus papatasii.* In 1924, one of the authors (A.) found three flies infected. The flagellates were in all stages, from the non-flagellated to the long flagellated forms. Of a batch of 191 *P. papatasii* examined by the authors in 1925, one was infected with the same organism. The flagellates occurred in the oesophagus, oesophageal diverticulum, mid-gut and hind gut. They were most numerous in the anterior part of the mid-gut, where they were attached to the oesophageal valve, a conspicuous structure in these flies. With the flagellates from this fly a volunteer was inoculated by scarification on the forearm in two places on June 26th, 1925. On July 31st, 1925, a small papule was noted on one of the inoculated spots and in it leishmania were found. Nothing developed at the other spot.

The authors refer to the earlier records of flagellates in Phlebotomus. The reviewer discovered leptomonas in a fly of this genus in Aleppo in 1912 Later Mackie (1914) reported 10 per cent of *P minutus* infected in Assam (this *Bulletin*, Vol 5, p 282) Recently, Shortt has examined Mackie's slides and finds that the flagellate is in reality a species of *Bodo* (this *Bulletin*, Vol 22, p 843) Patton (1919, 1922) refers to flagellates in *P papatasii* and *P minutus* in Mesopotamia and Palestine, but he has informed the reviewer that he did not intend to imply that these infections had actually been observed in flies in these localities The only authentic records of naturally occurring leptomonas infections of sandflies are those of the reviewer in Aleppo the authors of the paper under review in Palestine, and Laveran and Franchini (1920) in Italy

As regards the correct name of the flagellate evidence appears to be accumulating that it is *Leishmania tropica* but, if this be not so, one of the other names proposed will have to be used Mackie (1914) gave the name *Herpetomonas phlebotomi* to the flagellate seen by him, but as this is in reality a species of *Bodo*, the name becomes a synonym of *Bodo phlebotomi* It appears that the name *Herpetomonas papatasii* (*Leptomonas papatasii*) used by Adler, 1925 (this *Bulletin*, Vol 22, p 906), will be the correct one The experiments recorded in this paper go a step further than those carried out by Sergent, Parrot, Donatien and Béguet (1921), who produced an oriental sore on a man by inoculation of an emulsion of crushed *P papatasii*, which, however, were not known to contain flagellates (*loc cit* Vol 19, p 315)

C M W

Parrot (L) & Foley (H) Remarques épidémiologiques sur le bouton d'Orient en Algérie **[Epidemiology of Oriental Sore in Algeria.]**—*Bull Soc Path Exot* 1925 June 10 Vol 18 No 6 pp 485–495 [22 refs]

Recent observations have shown that the careful microscopic examination of all suspicious sores has gradually extended the known distribution of oriental sore in Algeria so that one is led to suspect that apart from the large towns no part of N Africa can be regarded as free from the disease The occurrence of isolated cases in certain localities is contrasted with the numerous ones which occur in recognized endemic foci, such as Biskra The authors in their lengthy discussion on the epidemiology of the disease in Algeria believe that this difference is best explained on the assumption that the virus persists in the sandfly and that the disease incidence will be directly proportional to the density of the sandflies

C M W

Flye Sainte Marie (P E) & Mansouri (A) Deux nouveaux cas de leishmaniose cutanée observés chez des indigènes marocains dans la région de Fez **[Two Fresh Cases of Dermal Leishmaniasis in Moroccan Natives near Fez.]**—*Bull Soc Path Exot* 1925 Oct 14 Vol 18 No 8 pp 639–641 [2 refs]

A record of 2 cases of oriental sore in the Fez district of Morocco The first case from this district was noted by Dekester and Melnotte a short time ago (this *Bulletin*, Vol 22, p 206)

C M W.

ESCOMEL (E.). Leishmaniose américaine des sinus frontaux. Traitement favorable par l'iodure double de quinine et bismuth. **[Leishmaniasis (American) of Frontal Sinuses. Successful Treatment by Double Iodide of Quinine and Bismuth.]**—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 634–639. With 1 text fig. Previously published in Spanish in *Cronica Med.* Lima. 1925. May. Vol. 42. No. 743. pp. 129–132.

A woman, aged 40 years, was found to be suffering from espundia with extensive involvement of the nasal mucosa and frontal sinuses. The patient had visited Peru 15 years before, where, after a bite on the nose by some insect, a papule developed at the site. This increased in size and became an ulcer, which persisted for two years. After its disappearance nothing was noted for 13 years, during which the patient lived in towns of high altitude. She than began to have pain in the nose and frontal region. When seen by the author the end of the nose was hypertrophied and ulcerated, producing an appearance of yaws. The condition extended into the nose and sinuses. Diagnosis was made by the discovery of numerous leishmania in the exudates. The nasal cavity and sinuses were cleared out under local anaesthesia and treatment with emetine injections commenced. Little improvement was noted Intramuscular injections of iodobismuthate of quinine, as recommended by VIGNE and PRINGAULT for the treatment of oriental sore, were then given. After 10 injections definite improvement had occurred. The external ulcer had healed and cicatrized, the pain and swelling in the frontal sinus had subsided, as also the intranasal ulceration. Unfortunately, the patient departed to her own country, so that it was not possible to judge whether a permanent cure had resulted. Nevertheless, the author feels justified in calling attention to the case, since in his long experience of the disease he has seen no case which has exhibited such rapid improvement.

C. M. W.

RABELLO (E) **Dermal Leishmaniasis.**—*Annaes Brasil de Derm e Syph.*, Rio de Janeiro 1925 Jan Vol 1 p 3 [Summarized in *Jl Amer Med Assoc.* 1925. Sept 19. Vol 85. No 12 p 934]

The author describes the mutilations which result from cutaneous leishmaniasis in Brazil as it exists at the present time, and compares it with those depicted on prehistoric pottery in Peru He points out that 90 per cent. of the cases resemble oriental sore of the old world They are mild, and spontaneous recovery commonly occurs. Any differences which occur in the remaining 10 per cent are due to secondary infections, so that there is no justification for regarding the South American disease as a distinct entity

C. M. W

SCHILLING (Viktor). Zur Frage der Einschlusskörper (Chlamydozoa, von Prowazek). II. " Schollenleukozyten " im entzündlichen Gewebe der Orientbeule (Leishmaniosis furunculosa). **[Inclusion Bodies II. " Schollenleukozyten " in the Inflammatory Tissue of Oriental Sore.]**—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 322–326. With 15 figs. on 3 plates. [4 refs.]

While examining sections of an oriental sore the author found that the leucocytes contained various types of inclusion bodies which were similar to those which have been found in various diseases of unknown etiology; the leucocytes containing such bodies have been grouped under the name *Schollenleukozyten* [lump or globule leucocytes]. Their presence in the cells of an oriental sore in which the causative organism is well known and easily recognized disposes at once of the view that they are possibly parasitic in nature (Chlamydozoa) as some have maintained The bodies are illustrated in three plates and have the appearance of globules or mulberry masses of small globules embedded in the cytoplasm of the cells.

C M. W.

i GUPTA (Priya Nath) **Kala-Azar.**—*Indian Med Rec* 1925 Oct. Vol 45 No 10 pp 319–325

ii CAMPOS (J J) Leishmaniasis in Goa (Conferencia feita na A M F I P) [**Leishmaniasis in Goa.**]—*Bol Ger Med e Farmacia* Bastora 1924 Nov 9th Ser No 11 pp 439–445

iii WYLLIE (W G) (?) **Case of Kala-azar.**—*Proc Roy Soc Med* (Sect for the Study of Disease in Children) 1925. Nov Vol 19 No 1 p 5–6

iv TRUFFI (M) Sulla Leishmaniosi cutanea [**Oriental Sore.**]—*Giorn Ital di Dermat e Sifilol* 1925 Apr Vol 66 (Year 60) No 2 pp 679–703

v PASTORE (R) Un caso di bottone d'Oriente in un lattante [**Oriental Sore in a Baby.**]—*Pediatria* 1925 Aug 1 Vol 33 No 15 pp 842–844 [16 refs]

i A general article on the disease

ii An address on kala azar and a suggestion that cases imported to Goa from Bengal may lead to the establishment of local foci of infection

iii An obscure case which it was thought might be kala azar contracted in Malta in 1924

iv An essay or thesis on oriental sore based on five cases which came under the author's notice in Sicily

v A case of oriental sore in an infant one year old in Sicily

C M W.

CHATTERJEE (K N) A Case of Kala-Azar with Transposition of the Viscera —*Indian Med Gaz* 1925 July Vol 60 No 7 p 326

YAGI (K) Zwei Fälle von Orientalfurche der Leber bei Formosanern und Vergleichung derselben mit solchen bei Japanern —*Taiwan Igakkai Zasshi* (*Jl Med Assoc Formosa*) 1925 July No 244 German summary pp 3–4 [In Japanese]

RELAPSING FEVER AND OTHER SPIROCHAETOSES.

LAFFORGUE (M.). Contribution à l'épidémiologie du typhus récurrent. **[Epidemiology of Relapsing Fever.]**—*Rev. d'Hygiène.* 1925. Nov. Vol. 47. No. 11. pp. 963–979.

A review of the records of relapsing fever in various parts of the world has led the author to the view that the disease frequently occurs in atypical forms so that diagnosis can only be made by the discovery of spirochaetes in the blood. The disease, moreover, is a serious one, which should be controlled by the same measures as those employed against typhus fever.

C. M. Wenyon.

MCCULLOCH (W. E.). **Relapsing Fever in Northern Nigeria—A Study of 300 Cases.**—*Jl. Trop. Med. & Hyg.* 1925. Sept. 15. Vol. 28. No. 18. pp. 332–341. With 5 charts in text. [4 refs.]

The paper gives an account of relapsing fever in Northern Nigeria, which was first visited by the disease in 1924. The population was non-immune and lousy, so that there was no check to its establishment. As *Ornithodorus moubata* does not occur in the country the louse is undoubtedly the transmitting agent. Spirochaetes were found in lice taken from cases of the disease. As regards the clinical features of the disease the course is that of infections due to *S. recurrentis.* Jaundice, commencing on the third day, was present in 92 per cent of untreated cases. A type of case referred to as the adynamic case was invariably fatal; in it the patient did not react to the infection by high fever Superficially, it is very like yellow fever, and corresponds with the "bilious typhoid" of GRIESINGER in Egypt. The general mortality rate is about 57·7 per cent, and the disease has wiped out about 5·15 per cent. of the population of Kano Province Treatment by neokharsivan is specific, and, excluding the adynamic cases which do not respond to the drug, it should reduce the mortality to 1 per cent. The first effect of the invasion was a fall in the birth rate owing to abortion. Later, with a fall in the monthly incidence of cases, the birth rate rose again, a fact which points to an active immunization of the population. It appears that infants are born with a passive immunity acquired from the mother. This explains the mild attacks in childhood, which will lead eventually to an immune adult population.

C. M. W.

RIGOLLET. Origine du typhus récurrent en Afrique Occidentale française. **[Origin of Relapsing Fever in French West Africa.]**—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18 No. 8. pp. 679–680.

The outbreak of relapsing fever which has gradually spread over the whole of Central Africa since 1921 has usually been ascribed to cases brought from Tunis or Syria. The author believes that there is reason to suspect that it originated in unknown foci in W. Africa.

C. M. W.

REITER (Hans). Studien ueber die stumme Infektion und ihre Folgen im Experiment mit Rekurrensspirochäten. [**Occult Infection and its Results in Experimental Relapsing Fever.**]—*Deut. Med. Woch.* 1925. Aug. 21. Vol. 51. No. 34. pp. 1400–1402.

The observations described in this paper deal chiefly with the influence of occult infections in mice, due to spirochaetes of relapsing fever, on subsequent immunity. By injecting decreasing doses of cultural forms of the spirochaete into a series of mice it is possible to arrive at a dose which gives rise to no evident infection, but which produces an immunity resembling that which appears after an evident infection. The injection of killed spirochaetes gave rise to no immunity. If graded quantities of immune serum and infected blood are injected a dose can be discovered which gives rise to an occult infection. The immunity thus produced does not differ from that which results from mixtures which produce definite recognizable infections. The inoculation of the brain substance of mice which have recovered from evident or occult infections into other mice does not bring about infection. Similar results were obtained by the inoculation of the brain substance of mice cured by drugs. If the brain substance of a naturally recovered mouse is inoculated together with virulent blood a mild infection occurs. On the other hand, if the brain substance of a mouse cured by drugs is used instead the infection resulting is a particularly virulent one, the drug appearing to have destroyed any immune bodies present.

C. M. W.

MANTEUFEL (Paul) & WORMS (Werner). Ueber die Bedeutung der Perkutaninfektion für die experimentelle Spirochätenforschung. [**Percutaneous Infection. Its Significance in Experimental Relapsing Fever.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 225–233. [62 refs.]

The paper reviews the observations which have been made on the percutaneous infection of animals with the spirochaetes of relapsing fever, Weil's disease and syphilis and the trypanosome of dourine. It is pointed out that this method of infection throws light on various questions connected with the etiology, immunity and other problems of the various diseases produced.

C. M. W.

KARWACKI (Léon). Les globules blancs dans la fièvre récurrente. [**The Leucocytes in Relapsing Fever.**]—*Presse Méd.* 1925. Aug. 26. Vol. 33. No. 68. pp. 1138–1139. With 2 charts in text.

From an examintion of the blood of 80 cases of relapsing fever in soldiers in Warsaw it was found that an attack was accompanied by a marked leucocytosis due chiefly to an increase in the polynuclears. After the febrile stage the leucocytosis gradually subsides. From the third day of the apyrexic period there is an increase in the lymphocytes at the expense of the polynuclears, while immediately before the next attack there is definite leucopenia associated with a lymphocytosis.

C. M. W.

GUERQUÉ (A. A.). De l'état des ferments au cours du typhus récurrent. **[The Blood Ferments in Relapsing Fever.]**—*Jl. Physiol. et Path. Gén.* 1925. July. Vol. 23. No. 3. pp. 617–624. With 5 charts in text. [13 refs.]

As a result of the examination of the blood of patients suffering from relapsing fever the author has found that there occur marked variations in the ferments of the blood. The protease is reduced in proportion to the severity of the disease. A less marked change occurs in the catalase, so much so that in severe cases the catalase may be present in larger quantity than the protease. After a natural crisis the latter rises rapidly and the former more slowly. The same change occurs, but takes longer in a crisis brought about by treatment. Various physiological explanations of these variations are given.

C. M. W.

GALLOWAY (I. A.). Cultures *in vitro* de *Spirochaeta duttoni* et de *Spirochaeta gallinarum.* **[Culture in vitro of** *S. duttoni* **and** *S. gallinarum.*]—*C.R. Soc. Biol.* 1925. Nov. 6. Vol. 93. No. 31. pp. 1074–1076.

The spirochaetes mentioned in the title were cultivated and maintained by sub-culture in the following medium. Small quantities of white of egg are placed in test tubes which are heated in the water bath till coagulation of the albumen has occurred, care being taken that is spreads over as extensive a surface as possible. To each tube 5 cc. of diluted rabbit or horse serum are added. The serum is first heated for half an hour at 58–60° C., and then diluted (with physiological saline?) to 1 in 5 in case of rabbit serum and 1 in 10 in case of that of the horse. A layer of oil is placed on the surface and the sterility controlled by incubation for 24 hours at 37° C. The addition of a drop of blood from a rabbit, monkey or human being helps the growth of spirochaetes, which flourish best at a temperature of 30–32° C.

C. M. W.

SEYFARTH (Carly), SARAFOFF (Dimiter) & KUSSITASSEFF (Konstantin). Experimentelle Untersuchungen ueber die Züchtung der Rückfallfieberspirochäten und ueber deren Verhalten im Gewebe. **[Cultivation of Relapsing Fever Spirochaetes. Their Behaviour in the Tissues.]**—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 344–359. With 8 figs. on 1 plate. [19 refs.]

The authors have cultivated relapsing fever spirochaetes in a perfectly clear medium consisting of a mixture of 2 cc. of fresh sterile horse serum, 4 cc. of physiological saline solution and 1 cc. of a 0·5 per cent. solution of dextrose. The advantage of the medium is that the spirochaetes are easily studied by dark ground illumination. It was noted that in the strain of *S. obermeieri* studied the spiral was right-handed in all the organisms while in *S. duttoni* both right-handed and left-handed types occurred. The formation of knob-like structures on the spirochaetes was observed, but no evidence could be obtained that these were resistant or developmental forms. The only method of reproduction was transverse fission. Various types of degeneration of the spirochaetes occur in the blood and organs of infected animals.

The spirochaetes appear to accumulate in the spleen, while in the liver a destructive process occurs. The organisms were demonstrated in the parenchyma cells of the liver and in the grey substance of the brain, so that they are evidently not merely parasites of the blood.

C. M. W.

MATHIS (C.) & GUILLET (R.). Réceptivité de la souris grise au spirochète d'Obermeier. [**Susceptibility of the Gray Mouse to Obermeyer's Spirochaete.**]—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 680–682. [2 refs.]

It is usually claimed that the spirochaete of tick fever is more virulent to animals than that of the louse-borne disease. With the Senegal strain of the latter the authors have shown that the local grey mouse may be readily infected. If a number of animals are inoculated with one sample of blood the majority show only a slight subsequent infection but a few will develop an intense one. Attempts at subinoculating from animal to animal were not very successful as it was not possible to carry on a strain for more than two passages.

C. M. W.

FELDT (Adolf) & SCHOTT (Alix). Empfänglichkeit junger und alter Mäuse für Recurrens. [**Susceptibility of Mice, Young and Old, to Relapsing Fever.**]—*Ztschr. f. Hyg. u. Infektionskr.* 1925. Aug. 19. Vol. 105. No. 1. pp. 241–246. [4 refs.]

Adult mice fed with blood containing relapsing fever spirochaetes acquire heavy infections in 95 per cent. of cases. These infections are just as intense as those resulting from subcutaneous or intraperitoneal inoculations. Blood placed on the conjunctiva produces infections in only 36 per cent. of cases, and these are either very mild or of moderate intensity. The incubation period of infections resulting from feeding is on an average 3·5 days in young mice and 5·3 days in adult mice.

C. M. W.

KROÓ (H.). Beitrag zur Biologie der Recurrensspirochaten. [**The Biology of the Relapsing Fever Spirochaetes.**]—*Klin. Woch.* 1925. July 9. Vol. 4. No. 28. pp. 1355–1356.

Having a strain of the spirochaete of Russian relapsing fever which had been maintained in mice, the author fed clean *Ornithodorus moubata* on the animals. Later, an emulsion of the ticks was inoculated to mice and a strain of spirochaetes obtained from the ticks. It was found that animals which had recovered from an infection with either the original or the tick strain were not reinoculable with that strain, but could be infected with the other. The sojourn in the tick had transformed the spirochaete into a distinct serological type.

C. M. W.

CUNNINGHAM (J.). **Serological Observations on Relapsing Fever in Madras.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Mar. 19 & May 21. Vol. 19. Nos. 1 and 2. pp. 11–33. With 4 charts in text & 12 figs. on 2 plates. [47 refs.]

Working with the spirochaetes of Madras relapsing fever in experimentally inoculated squirrels, the author has noted that the spirochaetes which occur in the blood during the first attack differ serologically from those which appear in the first relapse. Furthermore, those of the second relapse resemble those of the first attack, while those of the third relapse resemble those of the first relapse. There thus appears to be an alternation of two serological types. The tests were made by adding serum to blood containing spirochaetes and noting the presence or absence of agglutination with the dark field microscope. Spirochaetes were inoculated from human beings into monkeys, and then into squirrels in which the three strains on which the observations are based were kept. A first attack spirochaete is one which was recovered from man during the first attack, and handed on from animal to animal, the sub-inoculations always being made during the first attack. The first relapse spirochaete was obtained from an animal during its first relapse and then handed on from animal to animal, the sub-inoculations being made during the first attack. The second relapse spirochaete was similarly obtained during a second relapse and handed on as indicated above. It was found that the serum of an animal taken at the interval between the first attack and first relapse would agglutinate only the spirochaetes of the first attack and those of the second relapse, while the serum taken between the first and second relapses would agglutinate only the spirochaetes of the first and third relapse. These serological differences remain constant provided the sub-inoculations are always made during the first attack. If, after a number of passages, the sub-inoculation is made at the first relapse instead of at the first attack, the spirochaete changes to the other type. A number of experiments conducted with human sera indicate that the same alternation of types occurs in human beings. [The observations recorded in this paper are evidently an extension of those of LEVADITI and ROCHÉ, JANCSÒ and others referred to in the paper by BRUSSIN (see below).]

C. M. W.

BRUSSIN (A. M.). Eine neue Immunitätsreaktion bei experimentellem Rückfallfieber. [**A New Immunity Reaction in Experimental Relapsing Fever.**]—*Ztschr f. Immunitätsf. u. Experim. Therap.* 1925. Sept. 30. Vol. 44. No. 4-5. pp. 328-346. With 2 text figs. [7 refs.]

The author points out that RIECKENBERG (this *Bulletin*, Vol. 10, p. 56) first showed that the blood of an animal which had recovered from a trypanosome infection or had been cured contained substances of such a nature as to cause trypanosomes in citrated blood suspension to become laden with blood platelets when the serum containing the substance was added. If after apparent recovery from a trypanosome infection the animal relapsed, the relapse trypanosomes did not respond, the reaction only occurring with trypanosomes of the primary infection. To this substance the name "Thrombozytobarinen" was given. The author of the paper under review has noted that a similar reaction occurs in the case of spirochaetes of relapsing fever (*Treponema duttoni*). The serum of animals which have recovered or been cured of an infection contains a similar substance which causes spirochaetes of the primary attack to be coated with platelets. If spirochaetes of the first relapse are tested there is no reaction, so that it is evident that those of the first attack differ serologically from those of the first relapse. The author notes that LEVADITI and ROCHÉ, JANCSÒ and others have previously shown that the serum of animals recovered from the first attack was capable of agglutinating spirochaetes of the first attack even after passage through a series of animals, whereas it has no such effect on the spirochaetes of the first relapse. Similarly, the platelet reaction was positive for first attack spirochaetes even after several passages in animals. The observations recorded are of interest in view of those described by CUNNINGHAM (see above).

C. M. W.

i. STEINER (G.) & STEINFELD (J.). Experimentelle Untersuchungen zur Pathologie und Therapie der Spirochätenkrankheiten. I. Die Immunitätsverhältnisse des Gehirns und des Serums in ihren Beziehungen zueinander bei experimenteller Recurrens. [**The Immunity Relations of the Brain and Serum in Experimental Relapsing Fever.**]—*Klin. Woch.* 1925. Oct. 15. Vol. 4. No. 42. pp. 1995–1997. [3 refs.]

ii. —— & SCHAUDER (H.). II. Zur Frage der Spirochätenpersistenz im Zentralnervensystem bei experimenteller Recurrens. [**Persistence of Spirochaetes in the Central Nervous System in Experimental Relapsing Fever.**]—*Ibid.* Nov. 26. Vol. 4. No. 48. pp. 2288–2289. [2 refs.]

i. The authors have investigated the relation of the spirochaetes of the brain to the immune substances of the blood of rats infected with the spirochaete of relapsing fever. For some time after an infection has disappeared from the blood and the animals are no longer inoculable spirochaetes persist in the brain substance. The brain substance of such animals has been shown to contain no immune bodies, though they are present in the blood. Furthermore, the spirochaetes of the brain are susceptible to the immune bodies in the blood of the same animal.

ii. The persistence of spirochaetes in the brain and bone marrow of recovered and immune animals is a regular phenomenon. They can be recovered from the brain medulla more often that from the cortex. As the latter has a better blood supply it probably contains more immune substance than the medulla.

C. M. W.

KRITSCHEWSKY (J. L.) & FRIEDE (K. A.). Die Chemoprophylaxis des Rückfallfiebers und der Trypanosomenerkrankungen durch das Stovarsolan. [**Chemical Prophylaxis of Relapsing Fever and Trypanosomiasis by Stovarsolan.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 5. pp. 707–753. [27 refs.]; also in *Arb. a.d. Microbiol. Inst. des Volksunterrichtskomissariats.* Moscow. 1925. Vol. 1. French summary p. 348. [In Russian pp. 207–347. Refs. in footnotes.]

Working with relapsing fever spirochaetes and *Trypanosoma equiperdum,* the authors have shown that Stovarsolan, the Russian equivalent of Stovarsol, acts as a prophylactic against infection in animals, and as a therapeutic agent when given after the injection of the virus and before organisms appear in the blood. The prophylactic action was tested by administering the drug either by the mouth or by subcutaneous injection, and after an interval inoculating the virus. The therapeutic action was tested by inoculating the virus and administering the drug after an interval. In each case it is necessary that the interval be not longer than 3 to 8 hours. That the animals had actually been cured by the drug was proved by their susceptibility to inoculation at a later date The animals which had recovered without treatment could not be reinfected The papers are very long and involved, and contain an enormous number of figures set out in 40 tables in the Russian paper and 13 in the German version

C M W

KRITSCHEWSKY (J L) & LJASS (M A) Zur Frage ueber die Verwirklichung der "Therapia sterilisans" des experimentellen Ruckfallfiebers durch die Anwendung von therapeutischen und hypertoxischen Dosen von Salvarsan [**The Employment of Hypertoxic Doses of Salvarsan to obtain Therapia sterilisans in Experimental Relapsing Fever.**]—*Arch f Schiffs- u Trop -Hyg* 1925 Sept 1 Vol 29 No 9 pp 422–435 [14 refs]

The so-called therapeutic dose of salvarsan fails to eradicate from all mice infections due to *S duttoni* To bring this about it is necessary to inject hypertoxic doses of the drug The possibility of producing a sterilization of an infection depends in all its stages on the host individuality

C M W

SILVERSTON (J D) **Relapsing Fever Therapy in General Paralysis · Clinical Notes on a Case of Paresis treated with African Tick Fever.** —*Jl Mental Science* 1924 Jan Vol 70 No 288 pp 89–92

This paper gives the history of a case of general paralysis which was treated with a superimposed infection of *Spirochaeta duttoni* brought about by the bites of *Ornithodorus moubata* The incubation period was four days The first attack lasted six days and was associated on the fifth and sixth days with an erythematous eruption which covered the whole body except the face After an apyrexial period of two days a relapse occurred, spirochaetes again appearing in the blood They persisted for two days and then disappeared, the patient having no further attacks though no treatment was given A second patient inoculated with 10 cc of blood taken during the relapse did not become infected The infection of the first case appeared to have no influence on the general paralysis

C M W

DE MELLO (Froilano) **Some Remarks upon** *Spirochaeta bronchialis* **Castellani, and Bronchial Spirochaetosis.**—*Jl Trop Med & Hyg* 1925 July 1 Vol 28 No 13 pp 237–242 [12 refs]

The paper is a lengthy dissertation on the value of the author's method of differentiating spirochaetes, especially those of the mouth and bronchi It is claimed that the index obtained by dividing the sum of the lengths of 100 spirochaetes by the total number of coils together with the average length and breadth will give data sufficient for the differentiation of species It is concluded that *S bronchialis* is a good species which is distinct from the spirochaetes of the mouth and Vincent's angina The whole argument depends on a number of assumptions the failure of any one of which would invalidate the conclusions arrived at by the author

C M W

CADBURY (W. W.), JEU (L. N.) & HARVEY (J. L.) **Bronchial Spirochetosis in Canton.**—*China Med. Jl.* 1925. May. Vol. 39. No. 5. pp. 408–412. [8 refs.]

The paper describes four cases of pulmonary disease in Cantonese in the sputa of which spirochaetes could be found, but no tubercle bacilli. X-ray photographs of three of the patients showed evidence of pulmonary tuberculosis in two and this was confirmed by tuberculin test. In the third case the photograph showed nothing abnormal. To the two tubercular patients neoarsphenamine was given. It brought about marked improvement and disappearance of spirochaetes from the sputum. A similar result was obtained in the third case with sodium cacodylate.

C. M. W.

SCHIJVESCHUURDER (W.). Een geval van Spirochaetosis bronchialis. [**Case of Bronchial Spirochaetosis.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 3. pp. 277–279. With 1 plate.

A case of acute bronchial spirochaetosis in a native of Boeton (Dutch East Indies). Though there was repeated haemoptysis the patient's condition was good, the only physical signs being a few moist râles at the back. The sputum contained numerous spirochaetes and fusiform bacilli. Three injections of neosalvarsan effected a cure.

W. J. Bais.

KLINE (B. S.) & BERGER (S. S.) **Spirochetal Pulmonary Gangrene treated with Arsphenamins.**—*Jl. Amer. Med. Assoc.* 1925. Nov. 7. Vol. 85. No. 19. pp. 1452–1458. With 8 text figs. [7 refs.]

The paper describes cases of pulmonary gangrene which appear to be due to the aspiration from the mouth of spirochaetes and fusiform bacilli. It arises as a complication of any acute or chronic pulmonary condition. It is usually unrecognized owing to the attribution of the symptoms to the primary disease. It is a serious complication which is frequently fatal if left untreated. It can be suspected if in the course of any respiratory condition the sputum becomes brown and foul smelling, and if there is an increase in the severity of the existing signs and symptoms. The authors describe sixteen cases of the condition illustrating their account with temperature charts, X-ray photographs of the lungs and photographs of the spirochaetes. Five of the cases in which definite gangrenous necrosis with cavitation of the lungs was present were treated with arsphenamine which apparently prevented death and resulted in disappearance of symptoms. Five cases, which were either not treated, or treated only when moribund, terminated unfavourably. Five milder cases were promptly cured by arsphenamine. The sixteenth case left hospital after one injection of the drug. It is pointed out that the condition can be prevented by eradicating the primary oral focus of infection.

C. M. W.

BEZANÇON (F.) & ETCHEGOIN (E.). **Presence of Spirochaetes in the Sputum of Tuberculous Patients.**—*Jl. Trop. Med. & Hyg.* 1925. June 15. Vol. 28. No. 12. pp. 228–230. With 3 text figs.

The authors have examined 239 samples of sputum from tuberculous patients for spirochaetes, and believe that a particular type of spirochaete occurs in the sputa of the haemoptytic type. It is not present when haemoptysis is absent, but immediately appears when this condition supervenes. It was discovered in 26 out of 27 haemoptoic sputa together with tubercle bacilli. In the one case in which it could not be found tubercle bacilli were also absent. The following procedure was adopted for detection of the organism. A small quantity of the sputum was shaken up with about 1·5 cc. of physiological salt solution and allowed to stand for half an hour in the incubator at 29° C. The spirochaetes tend to accumulate on the surface of the liquid, from which a small drop is taken for dark-field examination or film making. The spirochaete is about 7 to 15 microns in length, with a distance of 3 microns between the spiral turns It is said to differ morphologically from *S. dentium*, *S. bronchialis*, *S. buccalis*, and the spirochaete of Vincent's angina.

C M W.

PONS (R) Vaccinothérapie antispirillaire dans les affections à association fuso-spirochétienne de la peau et des muqueuses. **[Vaccinotherapy in Affections of Skin and Mucosa due to the Fuso-Spirochaetal Association.]**—*Bull Soc Path Exot.* 1925. May 13. Vol. 18. No 5 pp 380–383 [1 ref]

Having obtained cultures of a saprophytic spirillum from a human mouth, the author was led to test the action of a vaccine prepared from it on various ulcerative conditions associated with the presence of spirochaetes and fusiform bacilli After preliminary trials a vaccine was prepared with a concentration of 500,000,000 organisms per cc. It was administered on successive days, commencing with a dose of 1 cc, increased to 1·5 and then to 2 cc In all 35 cases have been treated, of which one was a case of noma in an infant 2 years of age, 2 cases of membranous ulcerative stomatitis, one a case of alveolar dental pyorrhoea, 2 cases of chronic ulceration of the buccal cavity, and one a case of buccal gangrene In all the cases remarkably rapid healing occurred, associated with disappearance of the fusiform bacilli and later the spirochaetes.

C. M W.

MICHELONI (LOUIS A) **Spirochaetosis Riverensis.**—*Med Jl & Record.* 1925 May 20 pp 593–597

The writer of this paper believes he has discovered a new disease in Montevideo which he names Spirochaetosis riverensis It is said to commence as gonorrhoea, and to lead to a condition of meningitis in which the eyes, ears and heart are involved Diagnosis is made by the discovery of the spirochaete not by the physician, but by the patient himself, who is told to fix his gaze on the sky After some special training of the eyes and encouragement from drawings of the organism he is expected to see, the patient soon detects the spirochaete swimming in the anterior chamber of his eyes

C M W

SCHUFFNER (Wilhelm) Beitrag zur Leptospirose der Ratten **[Leptospira Infection of the Rat.]**—*Beihefte z. Arch f Schiffs- u Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 333–341. With 2 figs. on 1 plate. [5 refs.]

As a result of serological studies carried out with the leptospira of rats from Amsterdam, the conclusion is reached that these animals harbour distinct races. One race corresponds with the leptospira of Weil's disease, another with an organism (*Leptospira pyrogenes*) which was isolated by VERVOORT from a mild febrile disease in the Dutch East Indies [this *Bulletin*, Vol. 21, p. 262], and a third with neither of these, though it resembles the second one in some respects. It appears doubtful if rats are to be regarded as true reservoirs of the human virus. In Amsterdam there appears to be no relation between the incidence of the disease in man and the infection of rats. Two wild rats have been shown to remain infected for 1¼ and 1¾ years, so that it appears probable that the animals once infected remain so for the rest of life. In the kidneys of infected animals the leptospiras are collected together in a number of nests in the convoluted tubules, whence they escape regularly in the urine.

C. M. W.

BATTISTINI (Telémaco). **The Immunological Relationships of the Leptospira Group of Spirochaetes.**—*Jl. Trop. Med. & Hyg.* 1925. June 1. Vol. 28. No. 11. pp. 201–202. [7 refs.]

By introducing specific sera into leptospira culture media in total concentrations of 1/20 and 1/100 it was found that the homologous organism would not grow, while others did. Three species of *Leptospira*, viz. *L. icteroides* (5 strains), *L. icterohaemorrhagiae* (3 strains) and *L. hebdomadis* (one strain) were used. The results obtained afford additional evidence of the serological distinction of the 3 species of *Leptospira.*

C. M. W.

PATAY (R.). Sur l'extension aux flagellés d'un fixateur de Noguchi pour spirochètes. [**Noguchi's Fixative for Spirochaetes and Flagellates.**]—*Bull. Soc. Path. Exot.* 1925. Apr. 8. Vol. 18. No. 4. pp. 305–306. [1 ref.]

As a fixative for spirochaetes and various flagellates the author finds that recommended by NOGUCHI to give very good results. It is prepared as follows :—

A solution of N/15 disodium phosphate 88 parts is added to a solution of N/15 monopotassium phosphate 12 parts. Of this mixture 9 parts are added to 1 part of commercial formol. The fixation, which occupies 5 minutes, may be applied to wet or dry films. Red blood cells are destroyed so that the parasites are more clearly visible Staining can be carried out not only with Giemsa stain, but any of the basic stains, such as gentian violet or fuchsin.

C. M. W.

i. PETERS (Ludwig). Zur Recurrensbehandlung der Paralyse. [**Relapsing Fever Treatment of General Paralysis.**]—*Arch. f. Psychiatrie u. Nervenkrankht.* 1925. Apr. 26. Vol. 73. No. 5. pp. 592–599. [22 refs.]

ii. JOHNSON (W. B). **Case of Relapsing Fever occurring in a Patient under Treatment with a Salvarsan-Group Drug.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. June 18. Vol. 19. No. 3. p. 177. With 1 chart in text.

iii. Ito (Mitsutatsu). [**Experimental Studies on the Influence of** *Chrysanthemum cinerariaefolium* **against the Spirochetes.**]—*Nihon Biseibutsu Gakkwai Zasshi* (*Jl. Japan Microbiol. Soc.*). 1924. July. Vol. 18. No. 9. [Summarized in *Japan Med. World.* 1925. May 15. Vol. 5. No. 5. p. 130]

iv. Buschke & Kroó. Erwiderung auf die Arbeit von J. Tomioka: "Experimenteller Beitrag zur Frage der Immunität bei Recurrens und ihrer Beeinflussung durch die Salvarsantherapie" in Bd. 92. Nr 1/2 des Centralbl. f. Bakt etc. [**Reply to Tomioka's Paper "Observations on Immunity in Relapsing Fever and its Influence on Salvarsan Treatment."**]—*Cent f Bakt.* I Abt. Orig. 1925. June 8 Vol 95. No. 2/4. pp. 188–191.

Manteufel (P.). Bemerkungen zu der Erwiderung von Buschke und Kroó auf die Arbeit von Tomioka zur Frage der Immunität bei Recurrens usw. in Bd 95, S 188 d. Zeitschr [**Remarks on Buschke and Kroó's Reply to Tomioka's Paper.**]—*Ibid.* Aug. 15. Vol. 96. No 1 pp 12–17. [1 ref]

v. Izeki (Kaneoki). [**On So-called "Yellow Disease" prevailing in the Shangtung Districts in China.**]—*Jikken Igaku Zasshi* (*Jl. Experim. Med*). 1924. Sept. Vol 8 No 9. [Summarized in *Japan Medical World.* 1925. May 15 Vol 5. No 5 p. 134]

vi. Mathur (Sarup Narayan) & Zutshi (K. N). **Fungo-Spirochaetal Affections of Respiratory Passages.**—*Indian Med. Gaz.* 1925. Oct. Vol 60. No 10 pp 468–469.

i An account of the treatment of 15 cases of general paralysis with induced relapsing fever. In 10 of these cases the improvement was so marked that the patients were able to return to their occupations.

ii A patient who was being treated for syphilis at the Kaduna Hospital in Nigeria with intravenous injections of stabilarsan developed relapsing fever.

iii The extract of *Chrysanthemum cinerariaefolium* has marked action on the spirochaete of relapsing fever both *in vitro* and *in vivo* In the latter case the extract was administered to animals by the intravenous route.

iv. Both these papers are controversial in nature and criticize the results obtained by Tomioka (this *Bulletin*, Vol 22, p 711)

v. The "yellow disease" which is prevalent in Shantung, China, is said by the author to be due to a variety of *Spirochaeta obermeieri* Clinically, the disease appears to be allied to Weil's disease

vi. A record of the occurrence of spirochaetes and fungi in the sputa of 8 cases of bronchial trouble.

C M. W.

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de Mello (Froilano) Spirochétose broncho pulmonaire—*Arquivos Indo-Portugueses de Med e. Hist. Nat.* Nova-Goa. 1925. Vol 2. pp 1–20 With 4 figs. on 2 plates

RAT-BITE FEVER.

Parmanand (M. J.). **Rat-Bite Fever with Special Reference to its Aetiological Agent. II.**—*Indian Jl. Med. Res.* 1925. Apr. Vol. 12. No. 4. pp. 609–612. [11 refs.]

An investigation of Bombay rats has shown that the organism of rat-bite fever is most commonly present in the bandicoot (*Nesokia bengalensis*). It occurred in 11 of 100 of these rats examined, and in only 2 of 100 *Mus rattus*. Morphologically, the organism corresponds in every way with that first described by the Japanese, and has terminal flagella, though Row believed that the organism isolated by him from cases of the disease in Bombay was a different species.

C. M. Wenyon.

Row (R.). **On the Rat-Bite Spirochaete.**—*Indian Med. Rec.* 1925. Aug. Vol. 45. No. 8. p. 239. [8 refs.]

The author points out that Parmanand (above), in his description of the organism of rat-bite fever of Bombay, has neglected to acknowledge the work already done by him (the author) in this city. He does not agree that the organism studied by him is identical with that of the Japanese disease.

C. M. W.

Ebert (B.) & Hesse (E.). Zur Klinik und Bakteriologie des japanischen Rattenbissfiebers (Sodoku). [**Symptomatology and Bacteriology of Sodoku.**]—*Arch. f. Klin. Chirurg.* 1925. June 4. Vol. 136. No. 1. pp. 69–98. With 9 text figs.

The authors describe in considerable detail the nervous symptoms (affecting skin, eye, ear, nose) of a case of rat-bite fever seen by them in Russia. The pathological condition of excised lymphatic glands is noted, while it is claimed that from the blood a polymorphic leptothrix was cultivated. The serum of the patient gave positive reactions with this organism, though with other strains of leptothrix it was negative. The authors believe that there may be two types of rat-bite fever, the one caused by the usual spirillum, and the other by a leptothrix, or that the leptothrix occurs as a frequent secondary infection.

C. M. W.

Apert (E.), Kermorgant (Y.) & Garcin (R.). Trois nouveaux cas de sodoku observés dans la région parisienne. Parallèle entre le sodoku et la syphilis. [**Three Fresh Cases of Sodoku seen near Paris. Sodoku and Syphilis.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1925. July 16. Year 41. 3rd Ser. Vol. 49. No. 25. pp. 1080–1084. [1 ref.]

In giving a description of three cases of rat-bite fever in children in France the authors emphasize the resemblance of the disease to syphilis. In both there is a primary lesion followed by secondary lesions in the shape of adenitis and cutaneous eruptions. The eruption in rat-bite fever is first noted after the appearance of spirochaetes in the blood and, as illustrated by the cases described, it is localized in the head and neck. With the object of testing the action of bismuth one of the cases was treated for 3 months with injections of Quinby without any improvement taking place. It was then treated with arsenicals which, as in the other two cases, effected a cure. In a discussion following the paper Sézary suggests the administration of trivalent arsenicals (606 or 914) or pentavalent arsenicals (stovarsol, treparsol) for several days as a prophylactic after rat bites.

C. M. W.

MOOSER (H) Die Katze als Übertragerin von Sodoku **[The Cat as Carrier of Rat-Bite Fever.]**—*Beihefte z Arch f Schiffs- u Trop - Hyg* 1925 Vol 29 No 1 pp 253–260 [6 refs]

The paper describes a case of cat-bite fever in a woman The organism was not recovered, but the diagnosis was established by various serological tests The serum mixed with infected blood of guineapigs rapidly immobilized the spirochaetes A mixture of the patient's serum and infective blood incubated for an hour at 37° C failed to produce local lesions when injected into the skin of guineapigs When normal human serum was substituted local lesions appeared in 5–7 days In both cases a general infection resulted The cat responsible for the patient's illness and a dog from the same house were investigated Though no spirochaetes could be found, the serum of both animals contained antibodies It is concluded that both animals had suffered from the disease It was demonstrated that two cats and one dog were susceptible to inoculation with the organism

C M W

SANGIORGI (Giuseppe) A proposito della sclerosi primitiva sperimentale del Sodoku **[Experimental Primary Sclerosis in Sodoku.]**—*Pathologica* 1925 May 15 Vol 17 No 396 p 274

Referring to an observation made by ADACHI and MATSUMOTO that the organism of rat-bite fever inoculated into the subcutaneous tissue of the scrotum of rabbits gives rise to a sclerosis the author points out that the organism in many respects resembles a *Treponema* but that certain differences justify its inclusion in a distinct genus *Treponemella* as already suggested by him (this *Bulletin*, Vol 20, p 140)

C M W

SALIMBENI (A T), KERMORGANT (Y) & GARCIN (R) Sur l'existence de formes filtrables du parasite du sodoku dans la rate des souris expérimentalement infectées **[Filterable Forms of the Sodoku Parasite in the Spleen of Experimentally-infected Mice.]**—*C R Soc Biol* 1925 July 3 Vol 93 No 23. pp 229–230

Emulsions of the spleen of mice infected with the organism of rat-bite fever were filtered through Chamberland L 3 filters at a pressure of 40 cm of mercury after the addition of a culture of the coccobacillus of chicken cholera The filtrate, which was free from the added organism, was injected to mice in a dose of 5 cc and gave rise to a typical spirillar infection

C M W

SALIMBENI (A T), KERMORGANT (Y) & GARCIN (R) L'infection expérimentale du cobaye, provoquée par le parasite du sodoku **[Experimental Sodoku Infection in the Guineapig.]**—*C R Soc Biol* 1925 July 10 Vol 93 No 24 pp 335–337

Experimental rat-bite fever in guineapigs varies with the age of the animals Young guineapigs acquire an acute infection which is fatal in 12–15 days If adult animals are inoculated with small doses the disease is a very chronic one of 2 or 3 months' duration

Some of the animals show marked skin lesions and oedemas in which numerous spirilla occur. Others do not suffer in this way and appear to remain in good health. In both cases spirilla appear in the blood from time to time. The chronic form of infection in these animals is very similar to the disease in man.

C. M. W.

MOOSER (H.). **Experimental Studies with a Spiral Organism found in a Wild Rat and Identical with the Organism causing Rat-Bite Fever. Second Paper.**—*Jl. Experim. Med.* 1925. Oct. 1. Vol. 42. No. 4. pp. 539–559. With 6 figs. on 2 plates. [15 refs.]

The observations recorded in this paper are a continuation of those previously described (this *Bulletin,* Vol. 21, p. 742). The organism obtained from a wild rat in Mexico City and one isolated from a case of rat-bite fever have been studied in rabbits, which are easily inoculated with both. Three to 5 days after subcutaneous inoculation a local lesion in the shape of oedema, induration and inflammation appears. About 8 days later oedematous swellings and inflammation appear on the head and genitals. The organism could always be found quite easily by dark-field examination in serum aspirated from the primary lesions, but could not be found in the peripheral blood or in serum from the secondary skin lesions by this method. It was demonstrated, however, that the blood of rabbits was infective to guineapigs, as also portions of the tissues, including those of the secondary skin lesions taken from rabbits whose blood had ceased to be infective. It was proved that the infection was transmissible from rabbit to rabbit by coitus. Protective bodies appear in the blood of rabbits, and these are able to protect animals against inoculation. The experiments demonstrate that the naturally occurring rat strain and that derived from the case of rat-bite fever are identical.

C. M. W.

TAOKA (Kiyowo) & TANABE (Misao). [**Serological Studies on Experimental Protozoan Diseases. Communication II. Serological Studies of Experimental Rat-Bite Disease.**]—*Saikingaku Zasshi* (*Jl. of Bact.*). 1924. Dec. No. 346. [Summarized in *Japan Med. World.* 1925. May 15. Vol. 5. No. 5. p. 133.]

The blood of rabbits infected with trypanosomes acquires the property of giving a positive Wassermann and precipitin reaction. The blood of the normal rabbit may give a positive Wassermann reaction, but never the other. In the case of rat-bite fever two substances appear in the serum. One resembles the luetic reactive substance, while the other is a haemolysin.

C. M. W.

i. CAVINA-PRATESI (Giovanni). Altri casi di Sodoku in provincia di Brescia. [**Further Cases of Sodoku in the Province of Brescia.**]—*Riforma Med.* 1925. May 4. Vol. 41. No. 18. pp. 429–430.

ii. FRANCHINI (G.) & GHETTI (G.). Contributo allo studio del Sodoku. [**Sodoku.**]—*Pathologica.* 1925. June 1. Vol. 17. No. 397. pp. 295–298. With 2 charts & 4 figs. in text.

iii. THORP (Eustace). **Rat-Bite Fever in an Infant.** [Memoranda.]—*Brit. Med. Jl.* 1925. Aug. 8. pp. 255–256.

iv. WINKELBAUER (Adolf). Sodoku in Oesterreich. **[Sodoku in Austria.]** —*Wien. Klin. Woch.* 1925. Sept. 10. Vol. 38. No. 37. pp. 1003–1005. With 4 charts in text.

v. BLUM (Paul) & CLÉMENT (Robert). A propos de la réaction de Bordet-Wassermann dans le Sodoku. **[The Bordet-Wassermann Reaction in Sodoku.]**—*Progrès Méd.* 1925. Mar. 14. No. 11. pp. 390–395. [3 refs.]

vi. SALIMBENI (A. T.), KERMORGANT (Y.) & GARCIN (R.). La transmission héréditaire du sodoku chez le cobaye. **[Hereditary Transmission of Sodoku in the Guineapig.]**—*C.R. Soc. Biol.* 1925. July 10. Vol. 93. No. 24. p. 337.

i. A description of two cases of rat-bite fever in Italy.

ii. Description of a case of rat-bite fever in Bologna diagnosed by the discovery of the specific organism in the blood and in inoculated guineapigs.

iii. A record of an infant who suffered from intermittent fever, scarlatiniform rash and abscess formation after a rat bite in Sunderland. A diagnosis of rat-bite fever was made.

iv. A case of rat-bite fever in a boy 14 years of age in Austria.

v. The authors find that cases of rat-bite fever in which syphilis can be excluded may give a positive Wassermann reaction.

vi. The authors have shown that guineapigs born of parents infected with the spirillum of rat-bite fever may be themselves infected at birth.

C. M. W.

GUSSEW (V.). Ein Fall von Rattenbisskrankheit.—*Deut. Med. Woch.* 1925. Aug. 21. Vol. 51. No. 34. p. 1403. [3 refs.]

DI LORETO (Ottavio). Su di un caso di sodoku. (Sokoshio—Rat-Bite Fever—Setticemia eruttiva da morso di topo)—*Ann. di Med. Nav. e Colon.* 1925. Sept.-Oct. Year 31. Vol. 2. No. 3-4. pp. 183–190. With 1 plate. [18 refs.]

TAKAKI (I.). Ueber das Vorkommen der Erreger der Weilschen Krankheit (*Spirochaeta icterohaemorrhagica*) und der Rattenbisskrankheit (*Spir. morsus muris*) bei Wiener Ratten.—*Wien. Klin. Woch* 1925. Nov. 12. Vol. 38. No 46 pp. 1231–1232.

INFECTIOUS JAUNDICE.

HINDLE (Edward) & BROWN (H. C.). **Spirochaetal Jaundice in Great Britain.**—*Lancet.* 1925. Aug. 22. pp. 372–373. [10 refs.]

From the observations recorded in this paper, it seems probable that many cases of slight jaundice, especially in children, which are usually diagnosed influenza followed by jaundice are in reality due to leptospira infection. Two cases are described—that of a boy age 12, and his sister age 8. Fifteen days after his return from school in April the boy became ill with vomiting, slight fever and other symptoms. During the second week jaundice was well marked, and the urine contained albumin and red blood corpuscles. It was discovered that 14 cases of a similar kind had occurred amongst the boys from the school. The sister of the boy became ill exactly thirty days after his illness commenced. The symptoms in this case were similar, except that vomiting did not occur. Careful daily examinations of the urine were made for leptospira, and these were discovered on the ninth day in considerable numbers Guineapig inoculations were made from the centrifuged deposit of the urine without definite result No inoculation was made, however, on the ninth day when leptospira were found

C M Wenyon

HINDLE (Edward) **Leptospira in London Waters.**—*Brit Med Jl* 1925 July 11 pp 57–59 [12 refs]

The author has found that leptospira are present in London tap water, and several other natural waters, including that of the Thames A chance observation led him to the discovery of a simple method of demonstrating the presence of the organisms A Petri dish in which faeces diluted with tap water had been kept for some time was found to contain large numbers of leptospira It was finally shown that similar cultures could be obtained by adding to water in a Petri dish a small quantity of sterilized emulsion of faeces and incubating for about 10 days at 25° to 30° C The organisms will pass through an L3 Chamberland filter in sufficient numbers to be detected microscopically With an L5 filter they could not be detected in the filtrate, but appeared again in numbers when the filtrate had been incubated for 10 days in a Petri dish The author believes that these experiments support the view that some other and smaller stage of the organism exists It was not found possible to obtain a pure culture of the leptospira, nevertheless, guineapigs were inoculated with the impure cultures Though the animals gave a febrile reaction, and suffered from rectal haemorrhage, and on post-mortem showed slight jaundice and one or two haemorrhagic spots, the results obtained were inconclusive as regards the possible pathogenicity of the water leptospira The organism was agglutinated by a 1 in 40 dilution of an antiserum prepared from a pathogenic strain

C M W.

BURGESS (A S) **Leptospirae in Tap Water.**—*Proc. Roy Soc Med* (Sect Trop Dis & Parasit) 1925 June Vol 18 No 8 pp 57–58 With 1 text fig

A record of the occurrence of leptospira in the tap water of Accra, Gold Coast. The organism corresponded morphologically with those of yellow fever and Weil's disease

C M W

ZERI (Agenore) Sulla spirochetosi ittero-emorragica [**Icterohaemorrhagic Spirochaetosis.**]—*Riforma Med* 1925 Apr 27 Vol 41 No 17 pp 396–397

As a rapid means of diagnosing Weil's disease the author advocates the injection of about 5 cc of the urine of the patient into the peritoneal cavity of a guineapig If blood is withdrawn from the heart 24 to 48 hours later large numbers of leptospira may be found by dark ground examination [Are these really leptospira and not filaments ?]

C M W

PETTIT (Auguste). Apparition d'agglutinines dans le liquide céphalo-rachidien au cours de la spirochétose ictérohémorrhagique. [**Agglutinins in the Cerebrospinal Fluid in Weil's Disease.**]—*Bull. Acad. Méd.* 1925 Feb. 17. 3rd Ser. Year 89. Vol. 93. No 7. pp. 197–198.

Examining the cerebrospinal fluid of 3 cases of Weil's disease the author has been able to demonstrate that antibodies are present in sufficient amount to produce agglutination of the specific organism.

C. M. W.

DELAMARE (G) & ACHITOUV Graphiques des indices de courbure partiels de *Spirochaeta icterohaemorragiae* [**Graphs of Indices of Curvature of** *S icterohaemorrhagiae*]—*C R Soc Biol* 1925 Aug 14 Vol 93 No 27 pp 567–569 With 3 text figs

The variations in the curvature of *S icterohaemorrhagiae* and *S recurrentis* var *venezuelensis* are shown on charts which indicate that the former is distinctly polymorphic as compared with the latter, in which the polymorphism is at a minimum

C. M W.

ADACHI (Kiyohisa) & HIDAKA (Hiroyuki) [**On the Pure Culture of** *Spirochaeta Icterohemorrhagica*]—*Tokvo Iji-Shinshi* (*Tokvo Med News*) 1925 May No 2420 [Summarized in *Japan Med World* 1925 July 15 Vol 5 No 7 p 184]

The following medium is recommended for the cultivation of *Leptospira icterohaemorrhagiae* To 1,000 cc of tap water are added 0 5 gm of calcium chloride, 20 cc of citrated plasma, 50 cc of inactivated serum, and several cc of guineapig's blood After inoculation the proteins gradually form a flocculate which floats in a transparent liquid The organisms are most numerous in the flocculate

C M W.

YELLOW FEVER.

MULLER (Henry R.) & BLAISDELL (C. Byron). **Studies of the Yellow Fever Epidemic in Salvador, C.A., in 1924.**—*Jl. Trop. Med. & Hyg.* 1925. Aug. 1. Vol. 28. No. 15. pp. 277–284. With 2 text figs. [6 refs.]

During the period July to October, 1924, an epidemic of yellow fever occurred in San Salvador in which 56 recorded cases occurred. The investigations detailed in this paper refer to serological and pathological investigations conducted after the epidemic had subsided. Of 19 persons who had recovered from the disease the sera from 16 gave positive Pfeiffer's test with *Leptospira icteroides.* Of 5 persons from the Western part of the republic who had suffered from a suspicious disease the sera of two gave a positive test. The sera of 15 soldiers, 15 sanitary inspectors and 22 children from 6 to 8 years of age were negative. None of these had had the disease, though it was thought possible that they might have suffered in a mild and unrecognized degree. The negative test did not support this view. The test applied to vaccinated persons showed that the lytic substance induced by vaccination might still be active after the lapse of 5 months. The histo-pathology of 6 cases was investigated. In the liver zonal necrosis was present and more rarely focal necrosis together with marked fatty degeneration. Associated with these changes was round-celled infiltration and a milder polynuclear infiltration. Mitosis and haemorrhages were frequently found. The kidneys showed evidence of acute tubular nephritis. Lime casts were present in 2 of the cases ; it is suggested that they are formed in some but not all types of nephritis associated with yellow fever. They occur especially when desquamation of the tubular cells is a feature.

C. M. Wenyon.

LEBLANC (Thomas J.). **Studies of Yellow Fever in Vera Cruz in 1920-1921.**—*Jl. Trop. Med. & Hyg.* 1925. May 1. Vol. 28. No. 9. pp. 169–178. With 15 charts in text. [7 refs.]

During 1920 7 cases of yellow fever were studied in Vera Cruz from the point of view of isolation of leptospira. The disease was successfully transmitted to guineapigs from one of these cases and after the third passage *L. icteroides* was recovered in pure culture. The organism produced in guineapigs all the typical symptoms of experimental yellow fever in these animals. Of 7 cases of the disease treated with serum all recovered except one which was not treated until the end of the third day. Of 197 untreated cases 85 died. Amongst 748 non-immunes who were vaccinated there occurred two cases of suspicious mild yellow fever. Though it is thought that the 748 vaccinated individuals represented the greater part of the non-immunes of Vera Cruz there occurred 199 cases of yellow fever amongst the others.

C. M. W.

LEGER (Marcel). Épidémiologie de la fièvre jaune dans les colonies de l'Ouest Africain Français. [**Epidemiology of Yellow Fever in French West Africa.**]—*Bull. Office Internat. d'Hyg. Publique.* 1925. July. Vol. 17. No. 7. pp. 727–739. [32 refs.]

The paper gives an historical account of the outbreaks of yellow fever which have occurred in the French possessions of W. Africa since the first recorded epidemic in 1763. In Senegal the last outbreak occurred in 1911–1912. No cases have been reported from the Ivory Coast or Sudan since 1922, while the last cases were noted from Dahomey in 1924. The disease has never been recorded from Mauritania, Haute Volta, Nigeria, or Gabon. The author points out that, although the disease is no longer the nightmare it formerly was, there is still room for improvement in the regulations to render the campaign against it more efficacious. The results of declaration are so annoying that countries hesitate to report sporadic cases.

C. M. W.

NOGUCHI (Hideyo). **Yellow Fever Research, 1918-1924 : a Summary.**—*Jl. Trop. Med. & Hyg.* 1925. May 15. Vol. 28. No. 10. pp. 185–193. [54 refs.]

This paper gives a summary of the work which has been done by the author on the etiology of yellow fever with special reference to *Leptospira icteroides.* Most of the information has already been published, but it is very conveniently collected together here. It shows that the various strains of *L. icteroides* which have been isolated from yellow fever cases are identical, and that they differ serologically from *L. icterohaemorrhagiae* and *L. hebdomadis.* It is now pointed out that these 3 organisms not only differ from one another serologically, but also morphologically. To arrive at this conclusion they were compared under identical cultural conditions. The results, which were obtained in co-operation with Dr. BATTISTINI, are as follows:—

L. icteroides is shorter (4–14 microns) and thinner (0·2 microns) than *L. icterohaemorrhagiae.* The elementary spirals are less closely set. The shorter forms assume a semi-oval circle, the longer specimens show greater flexibility, doubling up at any angle. All rotate swiftly with some lateral vibratory movements.

L. icterohaemorrhagiae is considerably longer than *L. icteroides* (8–24 microns), usually more uniform in length and heavier in aspect. The elementary spirals are more closely set, although in very long specimens the spirals are somewhat looser. They have the well-known hooked ends and straight bodies and rotate swiftly and gracefully without lateral vibration.

L. hebdomadis averages slightly longer than *L. icterohaemorrhagiae* and the elementary spirals are almost geometrically equidistant and distinct. The organisms rotate swiftly and evenly without relaxation of the elementary spirals and without bending the ends into a hook, the body being almost a straight line in living forms. Killed forms have the characteristic hooked ends of leptospira. Occasionally one observes living organisms showing a small hook at one end, but they soon stretch out with change of movement. There is no difficulty in distinguishing this species from the other two.

Stained films, if properly prepared, can also be used for differential purposes. The best results are obtained by fixing the culture organisms in buffered formalin and staining the dried, thin films with a saturated alcoholic solution of basic fuchsin or gentian violet for a few seconds, or with Giemsa solution (1 in 20 distilled water) for 2 hours (see paper by PATAY above). Osmic acid fixation of the wet film, followed by staining with Giemsa solution also gives good results. The thin, delicate, rather short hooked forms of *L. icteroides* can be distinguished from the somewhat heavier and longer *L. icterohaemorrhagiae* with terminal hooks and the rather straight and coarser *L hebdomadis*. For purposes of comparison it is essential to use cultures grown under identical conditions and stained in the same dye solution

As regards the experimental transmission of *L icteroides* by the yellow fever mosquito the author mentions his own successful experiments and states that IGLESIAS, head of the Vera Cruz yellow fever laboratories, has also succeeded Two guineapigs, exposed to the bites of mosquitoes fed 33 and 31 days before on infected guineapigs, developed symptoms suggestive of yellow fever and in the blood of a guineapig subinoculated from one of the two on which the mosquitoes had fed leptospira were found

The paper also reviews the results of the use of the vaccine and serum in the prevention and cure of yellow fever The value of these, first proved to be efficacious in animal experiments, has been substantiated by the results of vaccination and serum treatment of human beings

It is concluded that the evidence summarized in the paper appears to warrant the conclusion that *L icteroides* is the cause of yellow fever

C M W

HANSON (Henry) & DUNN (Lawrence H) **The Use of Fish in the Control of Yellow Fever in Peru.**—*Milit Surgeon* 1925 Sept Vol 57 No 3 pp 232–241

This is a most interesting paper which describes the experiment carried out in Peru during 1921 and 1922 with fish as a means of controlling the breeding of *Aedes aegypti* (*Stegomyia fasciata*) After a number of preliminary observations had been made it was found that the local "life" (*Pygidium punctulatum piurae* E) was the most satisfactory fish They are voracious larvae and pupae eaters, and are so hardy that they will survive crowding in the pails and cans necessary for transport purposes They rapidly adapted themselves to life in containers in which with care they would live for a long time During the day they live at the bottom and come to the surface only at night to feed During the period February, 1921, to May, 1922 the total number of house visits was 1,111,527, and the number of fish distributed was 857,561, of which more than 80 per cent were lifes For containers of ordinary size 2 or 3 fish were sufficient, while 4 to 6 were required for tanks, wells or large cisterns The results obtained from the use of these fish are described as excellent and the method as one which was a great improvement over the earlier practice of throwing out or filtering the water

C M W

HOFFMANN (W H) La Anatomía Patológica de la Fiebre Amarilla—*Rev Méd de Yucatan* 1925 Apr Vol 13 No 6 pp 141–147 [See this *Bulletin* Vol 22 p 189]

—— Die Aetiologie des Gelbfiebers—*Seuchenbekämpfung* Vienna 1925 Vol 2 No 6 pp 279–283

MALARIA.

ROME. **Record of the Proceedings of the First International Malaria Congress held in Rome, October 3rd to 6th, 1925.**—54 pp. [Mimeographed Report.]

Presided over by Senator MARCHIAFAVA, the Congress was opened by H.E. Benito Mussolini, delegates having been welcomed in the name of H.M. the King of Italy by Senator Cremonese. It then proceeded to the consideration of its subject in six sections:—

I. *Biology of malaria parasites.*—Professor MARCHOUX, admitting that there remained unillumined spots, ranged himself on the side of the plurality of species of malaria parasites by reason of the difference in zygotes and time of evolution, identity of type when transmitted by injection or mosquito (now repeated thousands of times), specificity of cultures, and, he added, in that only in tertian malaria does splenomegaly occur; which last observation was not accepted by Professor PITTALUGA of Madrid. MUHLENS pointed to 70 transmissions of benign tertian parasites followed through all seasons without change, and BRUMPT to DARLING's experiments of deliberate superimposition of one infection upon another already existing. SWELLENGREBEL instanced a presumed mixed infection from which *A. ludlowi* transmitted only subtertian and *A. sinensis* only tertian malaria. Sadi DE BUEN noted that in Spain control had in one region almost eliminated quartan malaria, had lessened subtertian and affected tertian but little.

II. *Inoculation fever.*—MARIE sums up the effects of malaria on general paralysis thus: While general paralysis is not cured by this form of therapy it is proved that stabilization takes place with such persistent remissions that readaptation to family life and to social responsibilities are possible. In other forms of cerebrospinal syphilis it would seem as if malaria therapy acts as a mordant for the specific medication employed. JAMES indicated the objection of relatives to direct inoculation of blood from paralytics, the institution of stocks of infected mosquitoes and the observation that the observed results in over a hundred cases were superior to those of direct inoculation. Regarding "parthenogenesis," PONTANO having reverted to GRASSI's theory that cycles of pathogenesis of gametes caused relapses, PITTALUGA pointed out his own apparently forgotten work of 1903 on "Parthenogenesis of macrogametes in Laverania," indicated his growing doubts and his present conclusion that no case had been made out for this phenomenon and that PONTANO's work [as already suggested in this *Bulletin* Vol. 20, p. 774] was less convincing than his own. Victor SCHILLING's investigations into the blood picture of disease have lead him to recognize a nonspecific sequence, viz.: 1. A prodromal characterless phase. 2. A phase of combat (neutrophil). 3. A phase of weakening defence or of victory (mononuclear). 4. Healing (lymphocytosis-eosinophilia). In malaria the phases are rapid and tend to overlap, the usual blood-picture being of the third phase.

III. *Anopheles and malaria.*—It seemed to be the general feeling that *Gambusia*, or in Palestine *Tylapia* species would keep down larvae if sufficient numbers could be maintained. Paris green, in addition to its ordinary use with 99 per cent. of dust, might be, as BARBER advised, mixed with refuse oil which collects particularly round vegetation. The importance, for infection, of the house, and of indoor as opposed to outdoor meteorological conditions, was stressed by many, and JAMES pointed out that BRUMPT's experience of acquisition of malaria in tents (*vide infra,* p. 134) did not contradict this, since a "dwelling" included any shelter. SWELLENGREBEL indicated that in spite of drainage and reclamation Holland is to-day one of the richest of anopheline breeding grounds.

IV. *Propaganda and statistics.*—At Upsala, Sweden, two cases of malaria have been attributed to *A. maculipennis* infected from therapeutically-infected persons; spring outbreaks are in Sweden [as in Holland] attributed to autumnal infection, and the mosquito is held to prefer the blood of beasts to that of man. In Jugo-Slavia, too, IVANIK finds that specific precipitin reactions show that more anopheles have fed on cattle than on man, even when captured in human dwellings.

V. *The alkaloids of cinchona and malarial therapy.*—The most significant feature emerging from the discussion was the effort being made to discover in what part of the quinine molecule lies its therapeutic effectiveness, and to produce by synthesis some body which shall equal in value the cinchona alkaloids. CUICA held quinetin to be as effective as quinine.

VI. *The work of the Malaria Commission of the League of Nations.*—In discussing a paper by PITTALUGA on "Endemic Malaria in Europe to-day, and the Factors of its Variability," SWELLENGREBEL noted that in parts of the Dutch East Indies where endemic malaria is heavy, it is only children who carry gametes, while in regions previously lightly infected, but now epidemically affected, both children and adults show many gametes.

Finally the Congress adopted, among other resolutions, one by H.E. Dr. Fernando PEREZ, Argentine Minister in Italy, that a Permanent International Malarial Institute should be created in Rome with scientific and financial help of all nations; and another by Dr. Massimo SELLA that the Health Commission of the League of Nations should further aid the establishment of intimate collaboration between chemists, pharmacologists and clinicians for the systematic examination of all chemical substances likely to be actively effective against malaria.

Clayton Lane.

BLACKLOCK (D. B.) & GORDON (R. M.). **Malaria Infection as it occurs in Late Pregnancy; its Relationship to Labour and Early Infancy.**—*Ann. Trop. Med. & Parasit.* 1925. Sept. 30. Vol. 19. No. 3. pp. 327–363. With 2 charts, 3 text figs. and 4 coloured figs. on 1 plate. [12 refs.]

With the work already reported (this *Bulletin*, Vol. 22, p. 806) the period under consideration covers one year. Peripheral blood films disclosed infections as follows: Of 173 parturient women of Freetown, Sierra Leone, 71 examined by thick film, 9 showed *P. falciparum*, and three more pigmented leucocytes; of 43 non-parturient women, all examined by thick film, 3 showed infections, one by *P. vivax*, and 2 by *P. falciparum*, of which one film disclosed crescents; of 150 adult males examined by thick film, 3 showed trophozoites of *P. falciparum*; of 809 children, all examined by thin, and 100 also by thick film, 169, or 20·9 per cent., showed malaria parasites comprising all three species, 159, or 19 per cent., harbouring *P. falciparum*, of which 23, or 14·9 per cent., contained crescents.

On the other hand, of 155 placentas of the 173 parturient women, 59 showed *P. falciparum*, that is, 38 per cent. Over 50 per cent. of the infections occurred in May, June and July. Yet, notwithstanding prolonged examination, crescents were never found in placental smears. Although on section the villous spaces contained abundant parasites in infected cases, no parasites were ever found in the vessels of the villi, or, indeed, anywhere on the foetal side of the syncitiotrophoblast layer—none in the umbilical cord, none in the infant's circulation or organs.

Although the child was never found infected after death, the mother's infection must nevertheless handicap it, for, of 51 children born alive with an infected placenta, 25·5 per cent. died within 7 days; while, of 93 living children born with placenta uninfected, only 5·4 per cent. died within that period. Again, of binovular twins, one had anaemia of the placenta and of the first 6 inches of the cord, one parasite to 15 placental fields and 30 per cent. of them sporulating, evidence of great destruction of erythrocytes in the anaemic areas, and died within 15 hours; the other had a macroscopically normal placenta and cord, one parasite to 25 placental fields with none sporulating, no evidence of destruction of erythrocytes, and lived over the 7 days during which the mother remained in hospital. While, then, no parasites were found in either child, there was evidence of extensive destruction of erythrocytes in one placenta, caused, it is suggested, by a toxin liberated during sporulation. All the three children, in whose organs pigment was found, had died in utero, and all showed placental appearances resembling those of the first binovular twin. The writers feel compelled to leave open the question as to what this pigment is.

The original will repay detailed consultation.

C. L.

KENRICK (W. H.). **Report upon Malaria in the Central Provinces, 1912-1913.**—191 pp. With 14 maps & 12 charts. 1914. Nagpur: Govt. Press.

This report has but recently come to notice. The extensive investigation covered 95,577 children, perhaps the largest number ever examined in one area. Malaria in relation to rice cultivation is specially considered. By examination of 30,000 children the rice-producing area in question is divided into three sanitary categories. (1) A healthy one comprising nearly the whole of the open plains country with a spleen rate among 12,384 children averaging 4·3. (2) Endemic areas comprising the edges of the open plains and certain cultivated areas, all characterized by nearness to forest, jungle or hill, with a spleen rate among 9,075 children averaging 24·1, but ranging between 10 and 50. (3) Hyperendemic areas with jungle and hill in excess and close to villages, and a spleen rate in 8,971 children averaging 70·5. In 400 blood films all species of parasites were found, the quartan being particularly associated with considerable enlargement of the spleen in endemic areas. Intensive cultivation of rice is not then here associated with malaria.

The commonest anopheles is *A. fuliginosus*; *A. culifaciens*, the next, is held probably the main malaria carrier, since it was the only species (2 of 675 dissected) which showed sporozoits in the salivary glands, and corresponded in distribution with the malarial areas even when these comprised certain wards only of a town. Mosquitoes dissected numbered 1,052. The recommendations made entailed an expenditure of two laks of rupees annually.

C. L.

GILL (C. A.). **The Rôle of** ***A. rossii*** **as " Carrier " of Malaria. " The** ***Rossii*** **" Problem.**—*Indian Jl. Med. Res.* 1925. Apr. Vol. 12. No. 4. pp. 773–781. [8 refs.]

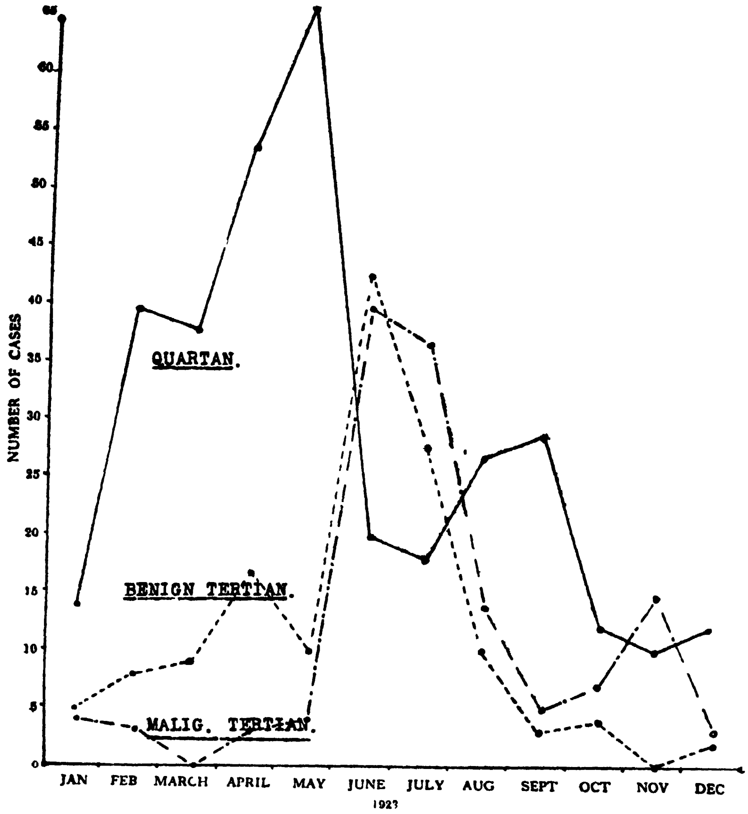
A. rossii, Giles is widely distributed throughout India, Ceylon, the Andamans, Federated Malay States, Malay Archipelago, South China and the Philippine Islands. The closely related species *A. vagus* Dönitz (*A. rossii indefinata*) is found in Bengal, Assam, Burma, F.M.S., and Malay Archipelago, while *A. ludlowi,* which so recently as 1914 was regarded by BARBER and by SCHÜFFNER as identical with *A. rossii,* is present in Burma, the Andamans, Madras, Ceylon and, predominantly, in the F.M.S. and the Malay Archipelago. Only then in North-West India is *A. rossii* found alone Is it in nature a conveyor of malaria ? The belief of Indian malariologists is that it is not. This was tested by examining the insect in the Punjab in relation to these four postulates.—(1) Abundant presence corresponding to the malarial season. It abounds from July to November, which is precisely the main malarial season, and it so outnumbers the other species that, even if a feeble carrier, it must be harmful (2) Capacity for experimental infection. Of 31 specimens fed on *P. vivax* blood 22 were dissected and 4 found infected. For *P. falciparum* the corresponding figures were 88, 67 and 0. *A stephensi* used as controls were readily infected by both plasmodia. (3) Avidity for human blood. The mosquito being so readily found in stables the question of zootropism arose. It was, however, found to feed readily on man in nature, and in the laboratory ; while serological tests, shortly to be published, showed that insects caught both in stables and habitations contained human blood. (4) Suitability of environment. Observations, described as incomplete, suggest that *A. rossii* is highly susceptible to low degrees of relative humidity.

" It would appear that the observations recorded in this paper tend to increase . . . the obscurity surrounding the *rossii* problem," and it is noted that if *A. rossii* be capable of transmitting *P. vivax* only, its prevalence when *P. falciparum* is epidemic might explain its taking no part in spreading malaria in the Punjab.

C. L.

CORNER (William). **Malaria in the Kirkuk Division of Northern Mesopotamia during 1923.**—*Trans. Roy. Soc. Trop. Med & Hyg.* 1925. Mar. 19 & May 21. Vol. 19. Nos. 1 & 2. pp. 41–69. With 8 charts & 2 maps. [5 refs.]

The reproduced graph shows to what a predominating extent the quartan parasite is responsible for malaria at Kirkuk. The predominant rhythm was a simple quartan, less frequently quotidian, rarely double. Single and double tertian infections were about equally common. Anopheline breeding has two peaks, in May and October. The general degree of splenic enlargement is high, and the spleen rate is high both in children and adults. In both there is a surprisingly low parasite rate. It is suggested that these large spleens are the effect of the predominant quartan infection, and that its heavy incidence in the early months of the year is residual from the previous season.



Graphs showing parasitology of malaria, Kirkuk, 1923.

[Reproduced from the *Transactions of the Royal Society of Tropical Medicine and Hygiene.*]

" A feature of the main malaria season was the fact that it lasted throughout the hottest and driest month of the year, when the 8 a m mean temperature was about 90° F, and the mean relative humidity was below 30 per cent Humidity, within limits, appeared to be a factor of comparatively little importance in influencing malarial prevalence "

C. L.

i. FOLEY (H), CATANEI (A), BROUARD (M) & DEMIMUID (P). Parasitisme et réactions morbides dans le paludisme chronique des enfants indigènes en Algérie [**Chronic Malaria in Algerian Children.**]—*Bull. Soc. Path. Exot.* 1925. July 8 Vol 18. No 7. pp 546–554. With 3 charts in text.

ii. ——, ——, —— & LEBLANC (L). Action du stovarsol dans le paludisme chronique à *Pl. vivax,* chez les enfants indigènes en Algérie [**Stovarsol in Chronic Tertian Malaria in Algerian Children.**]—*Ibid.* pp. 554–557. With 2 charts in text. [1 ref.]

i. Among the Arab population of the Algerian coastal strip the splenic always exceeds the parasite index. All three species of malaria parasite are found, generally singly The commonest association is *Plasmodium vivax* and *P. malariae* The common definitive host is *Anopheles maculipennis* In the mixed Arab and Negroid population of the Saharan oases exemplified by Beni Ounif, the parasite index always exceeds the splenic, in the sense that while the spleen rate in Arabs is much the same in both regions, that of negroes is lower *Anopheles multicolor* is there the definitive host The parasite rate was obtained by examination by two persons, over a period of one hour if necessary, of one smear and three thick preparations By these exhaustive methods three children were examined daily for 33 days No parasites (*P vivax* was concerned) were found in 29 of the 99 examinations When present, their numbers agreed generally with axillary temperature, but with certain definite exceptions [It may be commented that the symptoms in the most marked case (fitful appetite and diarrhoea pallor and anaemia, wasting with a protuberant and slightly ascitic belly, anisocytosis erythroblasts, and eosinophilia) would have warranted a faecal examination for hookworm eggs]

ii In this the most marked of the 3 cases cited above, aged 2 years and 8 months, stovarsol was given by mouth for 10 days in doses from 0·05 to 0 2 grammes, and repeated after a 10 days' interval Under the same rigorous examination described above, parasites which, in this case, had only evaded detection on one of the previous 33 days, disappeared on the third day, not to reappear The temperature did not remain quite normal, the spleen ceased to be palpable the blood state improved from 3,800,000 to 4,400,000 erythrocytes Three other cases were similarly benefited

C L

CHARRIER (H) Remarques au sujet du paludisme a Tanger durant ces vingt dernieres années [**Malaria in Tangiers in the last 20 Years.**]—*Bull Soc Path Exot* 1925 July 8 Vol 18. No 7 pp 558–569 With 3 text figs [6 refs]

Hospital statistics show roughly a ten-fold increase of malaria since 1905 Since the increase is disproportionate to that of other attendances an actual increase of malaria is held to exist With regard to GILL's figures (this *Bulletin,* Vol 18, p 328) of meteorological conditions favouring plasmodial development in mosquitoes, the local mean monthly temperature exceeds 16° C from May to October inclusive, and the humidity never falls below 63 per cent As to the prevailing wind the town is leeward of most mosquito breeding places A chart shows that malaria incidence is proportionate to, but a month later than, the spring rains, and is inversely proportional to the autumn rains. It is pointed out that, by influence on breeding places, a deluge decreases and an even rainfall increases local malaria

C L

BRUMPT (E) Etude d'une petite épidemie de paludisme contracté " en plein air " dans la région du lac Rodolphe [**Malaria contracted in the Open Air near Lake Rudolf.**]—*Ann Parasit Humaine et Comparée.* 1925 Oct Vol 3 No 4 pp 370–374 With 1 map and 2 text figs

Noting that the possibility of becoming infected in the open air is unaccepted by the League of Nations Malaria Commission, Brumpt adduces an instance which occurred near Lake Rudolf, in Abyssinia, where his party, moving camp six days weekly, and never entering huts, but sleeping in tents, became badly infected with malaria. He notes that his own tent trapped mosquitoes, which he caught daily, not as a hygienist, but a collector. He holds that these conditions are fairly described as " en plein air."

C. L.

MACKEOWN (R. J.). **Indigenous Malaria.**—*Jl. Roy. Nav. Med. Serv.* 1925. Oct. Vol. 11. No. 4. pp. 302–304.

The Royal Naval Hospital, Chatham, has recently had two admissions of Air Force personnel from Eastchurch, Isle of Sheppey, Kent, suffering from microscopically established infection with *P. vivax*. One had been at Eastchurch for nearly two years, had never previously suffered from malaria, had visited Northern France persistently all his life, and had served at Constantinople from October, 1922, to September, 1923. The other had never left the United Kingdom, had been stationed at Eastchurch for 20 months, and had recently been bitten by mosquitoes. An interesting survey of the malarial history of the Isle of Grain is appended.

C. L.

MARTINI (E.). Ueber einige ältere deutsche Malariaepidemiekurven. [**A Study of Old German Malarial Curves.**]—*Cent. f. Bakt.* 1. Abt. Orig. 1925. Sept. 15. Vol. 96. No. 2. pp. 101–108. With 1 chart in text. [14 refs.]

A study of malaria curves of earlier years shows that, north of the Alps, the peak of malarial incidence occurs in May or June. It is held that in hibernating anopheles malarial infection will not survive the winter, and that these peak cases have been infected in the previous summer, with an incubation period of six months and over.

C. L.

SANARELLI (G.). Lo stato attuale del problema malarico. Rilievi e proposte. [**Italy's Malarial Problem.**]—*Ann. d'Igiene.* 1925. May. Vol. 35. No. 5. pp. 417–448.

Malaria is held seriously detrimental to Italy by reducing the health and prosperity of the people, and the means used to combat it to be insufficient, whether antilarval measures, quinine distribution, screening or bonification. Our knowledge is imperfect, with many enigmas and lacunae. New means of combating malaria must be sought, as, for instance, by the creation in Italy of an Institute for the study of malaria such as the Ronald Ross Clinic for Tropical Medicine and Hygiene in London.

C. L.

GALLI-VALERIO (Bruno). Les causes de l'extinction de quelques foyers de malaria du nord de l'Italie et de la Suisse. [**Causes of Disappearance of certain Foci of Malaria in North Italy and Switzerland.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 126–134. [17 refs.]

To the explanation of the disappearance of malaria in these foci the writer brings an intimate knowledge of local conditions and of happenings elsewhere. It is concluded that the main element lies in the administration of quinine, and, to a less extent, in the diminution, but not the extinction, of anopheles. With these are associated better feeding and housing. In the writer's experience the value attributed to zootropism is baseless, and leads along a false track.

C. L.

LUSTIG (A.). [**Malaria in Italy.**]—*Rev. Sud-Amer. de Endocrin.* 1925. Aug. 15. p. 503. [Summarized in *Brit. Med. Jl.* 1925. Oct. 31. (Epitome of Current Med. Literature) p. 63]

In the north and centre of Italy malaria is mild, in the south and islands, severe, particularly in Sardinia. Figures for army and railways show how much it has lessened of recent years, a decline which may be attributed to drainage of swamps, social welfare work, economic betterment among the rural population, and greater consumption of quinine.

C. L.

FALLERONI (Domenico). L'anofelismo delle risaie nelle paludi Pontine, in relazione all' epidemiologia della malaria. [**Anophelism in the Rice Fields of the Pontine Marshes as affecting Malarial Epidemiology.**]—*Policlinico.* Sez. Prat. 1925. Oct. 5. Vol. 32. No. 40. pp. 1394–1396. [1 ref.]

It is held that there are in Italy two races of *Anopheles maculipennis*, the one larger, darker, more prolific, with dark eggs; the other with grey eggs, sometimes without floats. The former predominated where malaria was grave, and the latter in the rice fields, where it was mild. The races are held to influence transmitted malaria in this sense.

C. L.

MARCHOUX (E.) & RAYNAUD (Lucien). Enquête sur le paludisme en Corse. [**Malaria in Corsica.**]—*Rev. d'Hygiène.* 1925. Oct. Vol. 47. No. 10. pp. 849–880. With 1 map in text. [27 refs.]

Yet another report on the malarial state of Corsica has been originated by a request of the French Government that the League of Nations should conduct an inquiry, such as that recently effected by its agency in Italy and South-eastern Europe, and a suggestion that the personnel should include the writers. They covered the island in 10 days from 7th April onwards, Marchoux remaining a week longer. Their observations have necessarily been, in the main, anticipated. They captured, however, but two female imagines, *A. maculipennis*, and that after rigorous searches, no pupae, and many larvae, mostly still small. They conclude that the mosquito is carried on over winter by the eggs. The multitude of breeding places renders successful antilarval measures impossible. The problem must be attacked through the parasites in man. This is only possible by a whole time medical service, estimated to cost 3,000,000 francs yearly, which, it is held, would in two years render the island reasonably healthy, but could not even then be abrogated. Irrigation of the coastal plain is held essential, streams being impounded in the hills for the purpose, in order that the country may be exploited and pass from a pastoral to an agricultural state The inhabitants must at the same time be educated to realize that their interests are not bounded by their village eerie, or even by their island.

C. L.

LEAGUE OF NATIONS. MONTHLY EPIDEMIOLOGICAL REPORT OF THE HEALTH SECTION OF THE SECRETARIAT. Geneva. 1925. Mar. 15. 4th Year. No. 3. R.E. 76. pp. 104–106.—**Malaria in Russia in 1924.**

During the first ten months of 1924 the registered cases of malaria for the whole of Russia amounted to 5,352,349, or 410 per 10,000, as against 400 in 1923, and 216 in 1913. For various regions the figure varied from 8 for the North Western to 1,092 for the Volga. Where it was epidemic in 1923 it has since decreased, and where it was slight it has increased. In the North-Western region, Trans-Caucasia, Turkestan and the Far Eastern Republic the incidence is less than in 1913, in all other districts much higher. The maximum incidence was in September in 1922, in June in 1923, and in May in 1924 In Samara, North Caucasus, and Trans-Caucasia there were, however, two peaks, in May and September. The percentage of the total infection claimed by *P. falciparum* varied from 0·5 in parts of Siberia to 56 in Trans-Caucasia and Armenia Quartan malaria is reported only from the Volga district, Northern Caucasus and Trans-Caucasia, with its maximum incidence from September to January. *P. falciparum* has its peak in September, and *P vivax* in May Improved notification accounts for some of the increase, but in the country districts is so imperfect that the real incidence is estimated by some as ten times greater, the incidence for the whole of Russia lying, perhaps, about 10,000,000 annually. " The gravity of the problem is increased by the fact that famine reigns in certain districts."

C. L.

IOFF (I. G.). **On the Epidemiology of Malaria in the South East of Russia.**—*Works of the 1st All-Volgian Malarial Congress in Saratov, from 5 to 8 October,* 1924. pp. 70–72.

Recent work (Ioff 1922, KUSHEV & ASTAKHOVA, 1923) has called attention to the frequency of the so-called early spring (March, April, May) primary cases of tertian malaria in this Province. Investigating 1,000 cases of tertian malaria in Saratov during 1923–24, with a view to determining the time of the initial attack, the author comes to the conclusion that about one-half of all patients fell ill before the 1st of June, at which time infection through mosquitoes is quite improbable under local conditions Anopheles wintering in dwellings were found with extreme scarcity. Therefore, the author has to admit that under the conditions prevailing in South East Russia tertian malaria has, in half of the cases, a long incubation period. In 65 cases of quartan malaria the initial attack could be strictly fixed. These occurred between July and December, with maximum in October. 210 people arrived at Saratov in August after having spent the summer in a locality highly affected with all forms of malaria (Totzki). During the winter 34 of them, or 16 per cent., developed quartan malaria; the majority of them fell ill 1–3 months after their arrival at Saratov. Since quartan malaria was observed in Saratov in but 4 per cent. of cases, the author claims that these persons had been infected at Totzki in the summer, and that this form of malaria has an incubation period of several months duration, to which is due its appearance in late autumn and winter. If this be so, mixed infections must under local conditions be numerous, a consideration which accounts for the frequently observed change in the form of malaria in the same person during the year, there is no ground left for the unity theory.

I Ioff

[In forwarding this summary Dr Ioff comments thus upon the statement by MACKENZIE (this *Bulletin,* Vol 21, p 291) that anopheles were found breeding in water butts within houses in winter—" this observation can relate but to a single case, as no one of many Russian investigators for the S E has ever seen larva of anopheles in the water butts within the houses The females of anopheles domesticating in our dwellings have been found exceedingly seldom, and can by no means account for the numerous cases of malaria observed under our conditions en masse in winter and early spring months "]

C L

DOBREITZER (I A) [Le paludisme en Russie des Soviets] **[Malaria in Soviet Russia.]**—*Commissariat Santé pub* Moscow 1924 81 pp With 3 maps & 8 figs [Summarized in *Rev Applied Entom* 1925. Aug Vol 13 Ser B Pt 8 p 127]

Reverting to the malarial situation in Russia, it is estimated that the disease caused 60,000 deaths and the loss of 112,500,000 working days during 1923 Anopheles extended to the extreme north and to high altitudes, and they remain active in houses in March and in December

C L

LEAGUE OF NATIONS **Health Organisation. Malaria in Albania. Report by Dr. W. E. HAIGH dated February, 1925.** C H 272—62 pp

—— C H 272 (*a*)—5 pp

—— C H 272 (*b*)—29 pp With 1 map

This minutely detailed report leads up to a number of reasoned and reasonable recommendations Malaria is the most prevalent disease in Albania comprising as much as three-quarters of the sickness treated at public institutions, and affecting mainly the low coastal belt, where subtertian malaria is particularly common The main incidence lasts from late June to October Houses are mostly of a type which forms an ideal shelter for mosquitoes, and the incomplete separation of portions set aside for man and animals makes it easy for those attracted by animals to pass on to man Fumigation, spraying and screening are impracticable in them Poverty and undernourishment are rife, the State Medical Service is rudimentary, the provision of quinine is inadequate *Anopheles maculipennis* is the chief vector, breeding in running water up to the end of September

C L

GAGE (E H) **Studies of Impounded Waters in Relation to Malaria. The Trend of Malaria in Horse Creek Valley, Aiken County, S.C.**—*Public Health Rep* 1925 Oct 16 Vol 40 No 42 pp 2211–2219 [2 refs]

This narrow valley contains a series of dammed up reservoirs, by which the fall in level is completely used for working cotton mills Moreover, numerous springs, seepage areas and ditches exist It has a highly malarious history, and returns show that during the last 10 years 26 deaths are attributable, not perhaps entirely accurately, to that infection. These ponds contain *Gambusia affinis* and *Fundulus nottii*, the latter predominating, but are heavily stocked with game fish. Judged by the dipper, four times as many larvae inhabit the casual waters as the reservoirs. There emerged eventually *Anopheles crucians*, *A. punctipennis* and *A. quadrimaculatus* in these percentages; from ponds 84, 6 and 10, from casual water 77, 21 and 2. A census of 1254 persons produced a history of malaria in 43 per cent., with recent attacks in 12 per cent. In 111 children examined, no enlarged spleens and no positive blood films were found. Local medical practitioners, mill officials, and visitors to summer camps agree that malaria is not of great importance.

C. L.

DE BELLARD (E. P.). Malaria.—Trabajo leido en la Academia de Medicina en la sesión del dia 2 de julio de 1925. [**Malaria in Venezuela.**]—16 pp. 1925. Caracas: Tipografia Americana.

A general and up-to-date survey of general knowledge for loca use. Round the Lago de Maracaibo malarial incidence is as high as 100 per cent. The maximum prophylactic dose over a long period is put at 0·65 gm. quinine daily, and the constant failure of its effectiveness is noted. The splenic index is as high as 52, and the parasite index 48. *P. vivax* comprises 83, and *P. falciparum* 17 per cent. of infections. Treatment follows accepted lines.

C. L.

VITETTI (G.) & POLLITZER (R.). Stato degli organi ematopoietici nell' infezione malarica del bambino. [**The Haemopoietic Organs in the Malarial Infection of Children.**]—*Pediatria.* 1925. Sept. 15. Vol. 33. No. 18. pp. 973–978.

In 20 malarial children from one month to four years old, the cellular constituents of the bone marrow and blood were compared. Haemopoietic activity was intense Malaria parasites were never encountered within erythroblasts or other immature red cells. Large mononuclears were almost constantly increased in the peripheral blood. The excess of these cells there and of eosinophils in the medulla indicates their prevalent origin from the reticulo-endothelial tissue and the marrow respectively.

C. L.

KERVRANN. L'urobilinurie dans le paludisme [**Urobilinuria in Malaria.**]—*Ann. de Méd. et de Pharm. Colon.* 1925. May–June–July–Aug. Vol. 23. No. 2. pp. 340–342. [1 ref.]

Schlesinger's solution, 10 per cent. of acetate of zinc in alcohol, is thoroughly shaken, mixed with an equal quantity of the suspected urine, a few drops of weak tincture of iodine added, and the whole filtered. The filtrate is fluorescent if urobilin be present ATKINSON holds that this reaction is diagnostic of malaria. Kervrann found it positive in 72 per cent. of microscopically established cases of malaria, the percentages being 70 for *P. falciparum*, 83 for *P. vivax*, and 75 for *P. malariae.* It was present in all of 3 cases of pneumonia, and in 4 of 5 large abscesses. It was, therefore, not specific.

C. L.

MACCIOTTA (G) Contributo allo studio delle forme atipiche della malaria nei bambini [**Atypical Malaria in Children.**]—*Pediatria.* 1925 Nov 1 Vol 33 No 21 pp 1151–1169 [16 refs]

In the cases of three small children infected with tertian malaria the temperature, during observation, did not rise above 37·2° C In two, the minimum temperature coincided with sporing In the third a few purpuric spots appeared, with tertian rhythm, during sporogony.

C. L

COGLIEVINA (Benvenuto) Herpes Zoster und latente Malaria [**Herpes Zoster and Latent Malaria.**]—*Wien Klin Woch* 1925 Sept 17 Vol 38 No 38 pp 1034–1035 [29 refs]

A man of 56 developed several crops of herpes zoster, and subsequently fever with the discovery of tertian malaria parasites Consideration of this case and of the literature leads the writer to the conclusion that latent malaria predisposes to the attack of the unknown infective agent of herpes zoster, that the nerve distribution of this corresponds to the zone of the liver which is sympathetically affected via the coeliac plexus which, by stimulation of the spleen, floods the blood with plasmodia

C I

CARO Accidents secondaires mortels de la chloroformisation chez un ancien paludeen [**Fatal Post-Chloroform Poisoning in a Case of Old Malaria.**]—*Ann de Med et de Pharm Colon* 1925 May–June–July–Aug Vol 23 No 2 pp 350–352

Immediately on coming to from a prolonged herniotomy under chloroform a man of 45 with a history of malaria 17 and of severe ankylostomiasis 5 years earlier experienced violent hepatic pain with nausea There followed localized mid axillary hepatic swelling jaundice retention of urine, respiratory difficulty with some basal crepitation At death on the 10th day, the firm elastic rather small liver had a grayish mahogany colour and on section showed naked eye evidence of interlobular cirrhosis with diffuent parenchyma The suggested diagnosis is acute yellow atrophy of the liver supervening on malarial cirrhosis [There was apparently no evidence of malaria but the case seems to have a bearing on carbon tetrachloride poisoning]

C I

WESENHAGEN (G L) Hersenverschijnselen bij malaria [**Cerebral Symptoms in Malaria.**]—*Nederl Tijdschr v Geneesk* 1925 Aug 8 Year 69 2nd Half No 6 pp 763–764

In a man of 54 abdominal pain vomiting discomfort over the bladder cerebral confusion and an epileptiform attack and in a boy of 9 indistinct speech and a palsied arm cleared up under quinine after malaria parasites had been detected in blood films

C L

SLOT (J A) Phagocyteerende reticulo-endothelien in het perifere bloed in een geval van malaria [**Phagocytic Reticulo-Endothelial Cells in the Peripheral Circulation in a Case of Malaria.**]—*Geneesk Tijdschr v Nederl-Indie* 1925 Vol 65 No 4 pp 458–460 With 1 plate.

The typical samples of these cells were found by the author only during a very short period of the disease (not longer than a couple of hours). A great number of erythrocytes was infected and the author therefore believes that a temporary failure of the spleen to perform its functions caused a proliferation of the reticulo-endothelial system in the liver, with subsequent liberation of a few of the cells.

W. J. Bais.

MORIN (Henry G. S.). Myélémie dissociée transitoire chez une paludéenne. [**Myelocytes in Malaria.**]—*Bull. et Mém. Soc Méd. Hôpit. de Paris.* 1925. Nov 19. Year 41. 3rd Ser. Vol 49. No. 34. pp. 1419–25.

There accompanied this attack of fever, caused by *P. vivax* "in the haemogregarine stage," corpuscles described as promyelocytes and myelocytes. The former are described as having a round or somewhat indented nucleus, small, with cytoplasmic granules almost exclusively neutrophil, the latter as larger, with the nucleus more or less deeply cleft. Together they at first comprised about 22 per cent of the leucocytic total.

C. L.

BIGLIERI (R). Formes anormales des gamètes de *Plasmodium falciparum* [**Unusual Gametes of** *P falciparum*]—*C.R Soc. Biol* 1925. Oct. 23. Vol 93. No. 29. pp. 965–966.

In a short note the writer describes from an inhabitant of Tucuman who had received intravenous injection of quinine: (1) Giant crescents measuring 18 by 5 to 6μ, staining normally and readily agglutinated by the serum of malaria patients, (2) Dwarf crescents, 5μ long, with a small, often double, excentric nucleus, with abundant central pigment forming a crown or two crowns, and with nuclei deeply staining with Giemsa

C. L.

MEDICAL RESEARCH COUNCIL. Privy Council Spec. Rep. Series, No 96. **Clinical Comparisons of Quinine and Quinidine.**—27 pp. [32 refs] 1925. London: H M. Stationery Office [Price 1s. net]

ACTON having concluded (this *Bulletin*, Vol. 18, p. 335) that quinine was specific for subtertian malaria, and that quinidine and cinchonidine were more valuable for the tertian form, a committee consisting of Dr. Andrew BALFOUR, Col. S P JAMES and Major H W ACTON, with Dr. H. H. DALE as chairman, forwarded to many persons record sheets and specially purified quinine and quinidine, prepared by Messrs Howards and Sons The test employed was the time required to free from parasites the cutaneous blood during an attack An interval of two years has resulted in the return of only 5 record sheets. All reporters conclude that quinidine is at least as efficacious as quinine. There is no clear evidence of any difference between the two alkaloids in toxicity for the patient, and none that the curative actions of these alkaloids are different for the different kinds of malaria parasites.

"The real importance of the conclusion reached is that it deposes quinine from the position of unique value which practice and tradition have accorded to it among the cinchona alkaloids. A systematic comparison of the other cinchona alkaloids with it, and particularly of cinchonine and cinchonidine, is very much to be desired."

The most detailed of the reports received was from Dr. FLETCHER, of Kuala Lumpur.

C. L.

COOPER (Alexander T.). **Treatment of Malarial Fever.**—*Milit. Surgeon.* 1925. Oct. Vol. 57. No. 4. pp. 392–396.

The treatment adopted was 40 grains of quinine sulphate daily for 5 days, and a 2-days interval. Should fever reappear—a repetition of the same dosage. Should it not—15 grains daily for a month, and 10 grains daily for two months. All doses were given in hospital. After treatment began, tertian parasites remained detectable in the blood, presumably in a thin smear, for an average of 3·25 days, when gametes were, and of 3·4 days when they were not, noted, the limits being 2 to 10 days. The figures for subtertian parasites were: Without gametes, 8·9; with gametes, 11·3 days, with limits of 2 to 23 days. [It is not clear whether the limits refer to gametes only, or whether the strength of the quinine solution was checked.]

C. L.

SINTON (J. A.). **A Clinical Method for the Estimation of the Amount of Quinine in Medicinal Solutions.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. pp. 25–28. [8 refs.]

Perhaps the title might better commence "A Clinical-Laboratory Method." It is insisted that the ready sale for quinine frequently leads in institutions to stock and bedside solutions being below ordered strength, a fact throwing light on a number of reports to the Quinine and Malaria Enquiry that quinine has failed, and the complete lack of success of the Enquiry in discovering any case of quinine resistance when it was established that quinine was actually taken. The method depends on comparing the relative opacity produced by adding to the suspected solution (previously treated to exclude albumin) an equal amount of Tanret's modification of Mayer's reagent, with either the opacity in a series of Brown's tubes (BROWN, H. C., I.J.M.R., 1919, vii, 343), or that produced by the reagent's action on standard quinine solutions. The original contains full details.

C. L.

AVISON (Douglas B.). **Mercurochrome in the Treatment of Chronic Malaria.**—*China Med. Jl.* 1925. May. Vol. 39. No. 5. pp. 419–421.

There were treated 14 cases, 8 being children from 6 years old and upwards, and 6 adults. Twelve were, by smear, "positive for malaria immediately before treatment," while the two negatives had recently taken quinine. The dose of mercurochrome was by a single intramuscular injection of a 1 per cent. solution—0.003 grammes per kilo of body weight. Flushing, headache, a rise in temperature of 1° or 2° C., chilliness or a rigor, and vomiting usually followed the injection. Exceptionally, the urine remained red for three or four days. The blood became "negative for malaria within a few hours." In no case were the symptoms dangerous, and all cases were held cured.

C. L.

KINGSBURY (A. Neave) & KANAGARAYER (K.). **Mercurochrome 220 in the Treatment of Malaria.**—*Indian Med. Gaz.* 1925. August. Vol. 60. No. 8. pp. 355–357. With 2 charts in text. [4 refs.]

One case of benign and one of subtertian malaria were each treated with three daily intravenous injections of 20 cc. of a 0·5 per cent. solution of mercurochrome 202, a dye and a fluorescent mercurial compound. In each case the administration of mercury was cut short by the appearance of stomatitis ; in each the dye caused no alteration in the parasites' staining properties, with, in the tertian case no, and in the subtertian some, diminution in their numbers. Fever and parasites disappeared on the exhibition of quinine. It is considered that the action of mercurochrome on malaria parasites is negligible, and that its unpleasant sequelae contraindicate its use in malaria.

C. L.

PONTANO (Tommaso). Il sale sodico dell' acido acetilossiaminofenilarsinico (stovarsolo sodico) nella malaria. [**Sodium Stovarsol in Malaria.**]—*Policlinico.* Sez. Prat. 1925. Nov. 23. Vol. 32. No. 47. pp. 1631–1637. With 7 charts in text. [2 refs.]

Stovarsol contains 27·2, its sodium salt 20·3, per cent. of arsenic. It may be given by mouth, intramuscularly, or intravenously. Seven cases were treated. In 1 infection was by *P. vivax*, in 4 by *P. falciparum*, in 2 the point is not noted. In all instances the blood immediately became negative. In this stage the *P. vivax*, one *P. falciparum*, and one unnoted infection left hospital. In the other cases parasites reappeared during continued oral administration of the drug in gramme doses, and had to be removed by quinine.

C. L.

VALENTI (F.) & TOMASELLI (A.). Lo Stovarsolo nella cura della malaria. II. Nota. [**Stovarsol in Malaria.**]—*Policlinico.* Sez. Prat. 1925. Nov. 23. Vol. 32. No. 47. pp. 1629–1631. With 5 charts in text.

Three cases of infection with *P. falciparum* were treated with stovarsol, two or three tablets daily. The alarming condition which ensued in two necessitated the administration of quinine. The third case was of moderate severity and the treatment seems to have been continued for about three months. Parasites remained abundant for over a month, then diminished in numbers, but did not disappear till quinine was given.

SMITS (E.). Is Antimoon een geneesmiddel tegen Malaria? [**Is Antimony Remedial in Malaria?**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 4. pp. 518–520. [6 refs.] With 1 folding table.

Smits has given a trial to the organic compounds "Heyden 661," stibenyl and stibosal, which are less toxic than tartar emetic. The results were completely negative, whilst the patients (15 in number) recovered and the parasites disappeared promptly on subsequent administration of quinine.

W. J. Bais.

BOUDREAU. L'iode dans la tuberculose et dans le paludisme. [**Iodine in Tuberculosis and Malaria.**]—*Jl. Méd. de Bordeaux.* 1925. Nov. 10. Vol. 102. No. 22. pp. 995–997.

REGNAULT (Jules). Iode ou quinine dans le paludisme. [**Iodine or Quinine in Malaria.**]—*Ibid.* pp. 997–998. [7 refs.]

Boudreau reiterates his statement of the cure of chronic malaria by iodine. The diagnosis was not parasitic. Regnault is equally authoritative in advising quinine administration six hours before the expected attack, with iodine (solution iodo-iodurée) during these. As a preventive he believes that quinine is often inefficacious and is not without risk of lessening working capacity, and producing haemoglobinuria and abortion.

C. L.

MASSIAS (Ch). L'iode dans le paludisme. [**Iodine in Malaria.**]—*Jl. Méd. de Bordeaux.* 1925. Oct. 10. Vol. 102. No. 19. pp. 819–820. [6 refs]

Massias points out that in his advocacy of iodine for malaria (this *Bulletin*, vol. 22, p. 827) BOUDREAU has no use for a parasitic diagnosis.

C. L.

i. CREMONESE (Guido) **"Smalarina" in Malaria.** [Correspondence]—*Lancet.* 1925. Sept. 26. pp. 675–676.

ii. LOW (G. C.) & GREGG (A. L.). **"Smalarina" in Malaria.** [Correspondence.]—*Ibid.* Oct. 3. p. 727.

(i) Referring to LOW and GREGG's tests of "Smalarina" (this *Bulletin*, vol. 22, p. 819) Cremonese states definitely that smalarina is unsuited for acute malaria. He maintains that it produces a "biological therapy" and leads to organic reaction and immunity, sometimes late in appearing and "very often associated with a feverish reaction"and resulting in rapid diminution of splenic enlargement and gradual improvement in health when the treatment is completed. He urges that no clinical control was carried out by the use of quinine alone, and that the rapid recovery and diminution of the spleen which followed the administration of quinine in LOW and GREGG's cases is too surprising to be due to quinine.

(ii) Low and Gregg reply that their controls were their numerous patients admitted to the Tropical Diseases Hospital during the past several years, and that the cases they quote made the *usual* progress under quinine—no worse and no better— than did those others. They refer readers to the pamphlet "Smalarina Cremonese" (*tom. cit*, p. 818). [They do not add that CREMONESE himself appears to have used no adequate untreated controls to check the results of the application of his therapeutic rules.]

C. L.

FLETCHER (William). **The Treatment of Malaria with Peracrina 303.**—*Indian Med. Gaz.* 1925. Nov. Vol. 60. No. 11. pp. 524–527.

The following is the writer's summary:—

"A supply of Peracrina 303 was received from the Haco Company who are the manufacturers. It is put up in pills weighing about 10 grains each They consist of a mass of yeast cells and a little starch, stained with a yellow dye. The makers state that 400 pills are required for the treatment of an ordinary case of malaria. The retail price of this quantity, in Singapore, is $24, or two pounds sixteen shillings. Treatment with Peracrina is, therefore, much more costly than treatment with quinine. The optimum dose, according to the makers, is 12 pills a day, and they recommend that this dose should be continued for about three months. Few people will submit to this treatment.

"The Haco Company state that the malaria parasites may increase during the first three weeks of treatment, and the temperature may rise occasionally. This makes Peracrina unsuitable for use in a country where malignant tertian infections are common and where death may ensue with shocking rapidity unless the number of parasites is rapidly reduced.

"A report by Dr. J. Walker on the treatment of malaria with Peracrina, was sent to me by the makers; it was published originally in the *Archiv fur Schiffs- und Tropen-Hygiene* The examples of cures effected by Peracrina were unconvincing, they did not prove that this substance had any effect on malaria parasites.

"Eighteen patients who were suffering from malaria, in the District Hospital at Kuala Lumpur, were treated with Peracrina Their average weight was 101 lbs, and they were given 8 pills daily Blood films were examined twice a day

"Nine of these patients were given Peracrina alone when they were first admitted to hospital; quinine was not given to them until its administration became imperative The result was that, in all except one, the number of parasites either increased or remained stationary and it became necessary to give quinine

"The other nine cases were given quinine at the commencement of treatment, either alone or in combination with Peracrina As soon as the parasites had disappeared, quinine was discontinued and Peracrina was given alone In two cases there was no relapse while Peracrina was being given, but they were under observation for only five and eight days, respectively. In the remaining 7 cases the parasites multiplied when the quinine was stopped and Peracrina was powerless to prevent relapse"

C. L.

ASCOLI (Vittorio). Risultati di taluni recenti metodi di cura della malaria. [**Some Recent Methods of Treatment in Malaria.**—*Policlinico* Sez. Prat. 1925. Aug. 3. Vol. 32. No. 31. pp. 1077–1081. [11 refs.]

For malaria is recommended a mixture containing quinine sulphate, tartrate of potassium and iron, and arsenious acid. It is believed that salvarsan hinders or retards relapses. Cinchonine and quinine may be substituted one for the other, particularly if tolerance or intolerance show themselves. X-rays are no specific cure for malaria, but exercise, perhaps, an indirect and adjuvant effect. Regarding smalarina it is noted that the pseudo-scientific press and political journals have trumpeted it abroad. It was given as advised by the author—that is, 6 or 8 tablets a day for a month at the price of 20 lire a tablet. It induced nausea and diarrhoea, in spite of being camouflaged by wafers and pseudonyms, was accompanied by access of fever with restlessness and delirium, and quinine had to be called in to cut the illness short.

C L.

OVAZZA (V. E.). Sulla permanenza di gametociti degli ematozoi malarici. [**On the Permanence of Malarial Gametocytes.**]—*Ann. d'Igiene.* 1925. May. Vol. 35. No. 5. pp. 449–451.

In about a thousand crescents the proportion of male to female elements was 1 to 2, or even 1 to 1 occasionally at the beginning of an infection, thus contrasting with STEPHENS and GORDON's figures of 3 to 1 and KNOWLES's of 10 to 1. It is, however, important to note that Ovazza, writing from the late Professor GRASSI's laboratory at Fiumicino, holds that, compared with the descriptions of the greater of the Italian observers, those of German and English authors are contradictory and lacking in precision. The criteria he gives are as follows: Macrogametes; larger, richer in protoplasm and chromatin, pigment more evident and with larger granules, movement absent or nearly so. Microgametes; protoplasm sparse, nuclei refractile with uniform rodlets of chromatin and pigment arranged towards the centre, movement marked especially at exflagellation. Gametocytes have persisted in the circulation in 54 cases from 7 to 55 days, macrogametes persisting longer under quinine treatment than microgametes.

C. L.

IOFF (I.). **On the Method of Morphological Studies of Malaria Parasites.**—*Rev. Microbiol. & Epidémiol.* 1925. Vol. 4. No. 2. English summary pp. 114–115. With 15 figs. on 1 plate. [In Russian pp. 77–82.]

The ordinary method of examination for malaria parasites, the dried smear, is employed for no other protozoon. The influence of drying was accordingly investigated. It is concluded that rapid drying minimizes, and slow drying intensifies, the Romanowski stain, including Schuffner's and Stephens-Christophers-Mauer's dots. Young parasites, slowly dried, form sharply outlined regular rings with compact chromatin, rapidly dried they have whimsical amoeboid outlines with loose chromatin. Crescents slowly dried—and slowly dying—in a moist chamber, may take on characters resembling those of gametes of *P. vivax.* From the summary it appears to be held that spherulation and flagellation may occur in the peripheral blood, but it is at least stressed that the drying of a film is a varying matter, giving under different conditions varying and confusing results.

C. L.

SAMSONOFF (P. F.). Zur Frage ueber einige morphologische Besonderheiten der Parthenogenese und die Bedeutung derselben bei den späteren Rezidiven der Malaria. **[Morphological Peculiarities in Parthenogenesis and their Significance in Late Relapses of Malaria.]**—*Cent. f. Bakt.* 1. Abt. Orig. 1925. Sept. 15. Vol. 96. No. 2. pp. 109–114. With 20 figs. on 2 plates. [17 refs.]

The writer publishes a two-page plate of coloured figures purporting to distinguish double infections of erythrocytes from parthenogenesis. On the evidence one is fully entitled to hold either opinion. The extraordinary variety in appearance which MINCHIN (*Quarterly Jl. Micr. Sc.*, 1909, viii, 755) and IOFF (above) have shown to attend variety in mode of preparation of blood protozoa requires more consideration than it commonly receives.

C. L.

Asbelew (W. N.) Ein Beitrag zur Wassermannschen Reaktion bei Malaria [**Wassermann Reaction in Malaria.**]—*Cent f Bakt.* 1 Abt Orig 1925 Sept 15 Vol. 96 No 2. pp 114–118. [10 refs]

The writer concludes that in malaria a fleeting Wassermann reaction coincides with the presence of parasites in the blood, and is not present in chronic malaria without parasites [The list of references should not be taken as a guide to the work that has been done by others on this matter]

C L

Epstein (H) & **Rubinstein** (B) Beitrage zur experimentellen Malariaforschung (Immunitatsfragen, Chininwirkung) [**Experimental Work on Malaria. Immunity and Action of Quinine.**]—*Beihefte z Arch f Schiffs- u Trop -Hyg* 1925 Vol 29 No 1 pp 76–87

The writers have repeated the experiments telling against the direct action of quinine in malaria, by injecting blood incubated in quinine solution at 37° C into paralytics Solutions of 1 in 5 000 were infective after being mixed for an hour and a half, and one of 1 in 500 after three hours and ten minutes The action is then indirect If the explanation lie in the formation in the organism of some curative metabolite of quinine it is unknown Alternatively quinine effects the production of an immune body A case is instanced [others are familiar to readers of the *Bulletin*] where four injections of malarial blood failed to produce illness although, as a footnote indicates there was a fleeting detection of parasites in the cutaneous blood 35 days after the last injection It is held that some antibody must be present in these cases, and that quinine must be held to act in the same way Passing to autohaemo therapy, it is advanced that when a man s infected blood is drawn off, and re-injected subcutaneously some parasites will die and a vaccine be formed Of 70 persons so treated, sixty per cent were held to be bettered, 20 to be worsened and 20 unchanged The bettering consisted, not in any lessening of sufficiently grave symptoms, but in the observation that 0 5 to 1 gm of quinine retarded the next malarial attack for two to sixteen weeks, the interval among non injected cases of the series being unmentioned It is believed that in injected cases gametes are found earlier than in others, which natural change the writer looks upon as evidence of specific resistance by the organism—and so as confirming his view

C I

Monteleone (Remo) Il liquido cefalo-rachidiano nella malaria [**Cerebrospinal Fluid in Malaria.**]—*Policlinico* Sez Med 1925 Sept 1 Vol 32 No 9 pp 470–476 [28 refs]

In 47 cases examined the cerebrospinal fluid was, in chronic malaria, unaltered, while in acute malaria it was under high pressure and contained more sugar than normal, with, in some instances, an increase in albumin and lymphocytes

C L.

YORKE (Warrington). **Further Observations on Malaria made during Treatment of General Paralysis.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. June 18. Vol. 19. No. 3. pp. 108–122. [9 refs.]

Warrington Yorke brings up to date the histories of his earlier cases (this *Bulletin*, Vol. 22, p. 50), and adds to their number. The same parasitic strain has been used throughout, passed alternatively by injection and mosquito. It has in certain cases been carried on by injection directly from patient to patient over three years and by forty transfers. Gametocytes not only persist, but exflagellate, and *Anopheles maculipennis*, fed on patients of the 35th, 40th and 41st passages, have developed oocysts, but, unfortunately, died before sporozoites could form.

The treatment of all cases was by 30 grains [2 gms.] of quinine daily for three days. Under this, 2 per cent. of injected, and 57 per cent. of naturally infected cases relapsed. These relapses occurred: in the first month 2, second 2, third 1, fourth 1, fifth 3, sixth 2, eighth 3, ninth 3, tenth 3, eleventh 1. In 4 of the 21 relapses, parasites spontaneously and permanently disappeared (observed 162 to 319 days); in 2, disappearance followed 10 grains of quinine (215 and 237 days); in 4, it followed the usual six-gramme course of quinine (37 to 391 days); in 4, one or two relapses occurred, but passed off without treatment; in 4, one or two relapses followed this course of quinine and were similarly treated (253 to 444 days); one died during a relapse; 2 are too recent for report.

There is, it is held, almost overwhelming evidence that appearance of relapses is largely independent of dosage of quinine, they have occurred irrespective of season, and the strain has been the same. The patient's individuality is then held to determine their occurrence. The hypothesis is restated, that quinine never destroys all the parasites, but that those which it does kill, by producing soluble antigen stimulate the host to the production of antibody.

That blood is infective after incubation for two and a-half hours at 37° C. with an equal quantity of a 1 in 5,000 quinine solution is confirmed. There is, it is noted, evidence that quinine is useless when the blood is negative. For instance, during the War, it was noted at Liverpool that [in relapsing cases] fifteen grains of quinine on each of two consecutive days invariably removed fever and parasites from the blood for at least 8 days. This double dose, however, administered weekly over long periods, did not prevent relapse within the eight-davs' interval in about half the cases.

It was not, in the earlier abstract, sufficiently emphasized that 10 grains of quinine daily from 5 days before to 7 days after an infective feed failed as a prophylactic. Infection could only be prevented by continuing the treatment for at least 10 days after the infective feed. In other words, quinine proved prophylactically ineffective against sporozoites. The collateral evidence suggesting that prolonged administration of quinine may exhaust the immunity-producing cells is mentioned.

C. L.

DAVIDSON (T. Wishart). **Treatment of General Paralysis by Malaria.**—*Jl. Mental Science*. 1925. July. Vol. 71. No. 294. pp. 486–490. [5 refs.]

Malaria reached Winwick Mental Hospital in *A. maculipennis* supplied by YORKE ready infected with an Indian strain of *P. vivax.*

Of 53 cases infected, 23 were by mosquitoes, 30 by injection (intravenous 16, intramuscular 13, subcutaneous 1) Incubation periods, shortest, average and longest, were By mosquitoes, 7, 14, 20, intravenous, 4, 7, 19, intramuscular, 10, 16, 23, subcutaneous, 20 Ten rigors were aimed at, but in thirty cases quinine (30 grains daily for three days) had to be used earlier to cut short the attack Of the mosquito infections 56 per cent relapsed, of the inoculations 3 3 Infection was invariable Three cases merit note All had had previous malaria, two certainly mosquito-borne (one naturally), the method of infection in the third being unmentioned After "re-infection" all showed parasites, but none had fever although in two cases at least it is probable that the first infection still persisted

C L

GRAHAM (Norman B). **The Malarial Treatment of General Paralysis.**—*Jl Mental Science.* 1925 July Vol 71 No 294. pp 424–431

Therapeutic tertian malarial infection, subcutaneously induced, was a factor in causing the death of 5 of 56 cases, for 2 of them developed pneumonia within 7 days of the termination of this treatment, and the 3 others died directly of exhaustion The strain was YORKE's from Whittingham, brought over in infected mosquitoes Of the paralytics 36 were discharged from the institution cured

C. L.

SCHULZF Die Malariabehandlung der Paralyse [**Malaria Treatment of Paralysis.**]—*Deut Med Woch* 1925 Nov 6 Vol 51. No 45 pp 1856–1858

A tertian strain of PLEHN's ran through 80 passages, and appeared gamete-free Another, started in 1923, has run through 50 passages with gametes It was conveyed by injection, subcutaneous or intravenous, the incubation period being 6 to 17 days with the former and 4 to 10 with the latter Treatment was by 3 grammes of quinine over three days (1·2, 1·2, 0 6) No relapses were observed

C. L

v. ENGEL (Rudolf) Die Uebertragbarkeit der Impfmalaria durch Anophelen [**Transmissibility of Inoculation Malaria by Anopheles.**]—*Deut Med Woch* 1925 Oct 16 Vol 51 No 42 pp 1738–1739

Gametes remained numerous in the strain of *P vivax* used, and mosquitoes were infected from the eighteenth passage made from man to man by injection.

C. L.

TROMNER (Ernst) & BALTZER (Hans). Spontanruptur der Milz bei Impfmalaria [**Spontaneous Rupture of the Spleen in Inoculation Malaria.**]—*Klin Woch.* 1925 Vol 4 No 45 pp 2159–2160 [12 refs]

A tabetic of 61 was injected with malaria [presumably *P. vivax*]. After six quotidian febrile attacks he felt wretched, vomited, complained of abdominal pain running to the left shoulder. The spleen was enlarged and tender Collapse and death revealed about three-quarters of a litre of blood in the abdominal cavity, a spleen measuring 13 by 9 by 7 cm, weighing 410 gms, and having a fibrous capsule with three rents anteriorly, 0 5 to 10 cm long It was a typical malaria spleen Trauma, it is held, can be definitely excluded

C L

BERING (Fr) Die Impfmalaria zur Behandlung der Tabes **[Inoculation Malaria in the Treatment of Tabes.]**—*Muench Med Woch* 1925 Aug 28 Vol 72 No 35 p 1455

This paper is without malarial interest but it is noteworthy that although some of the tabes cases were uninfluenced in others improvement was most striking

C L

MARIE (A) Traitement de la paralysie générale par le paludisme **[Malaria and General Paralysis.]**—*Bull et Mém Soc Méd Hôpit de Paris* 1925 June 18 Year 41 3rd Ser Vol 49 No 21 pp 898–899

From the neurosis viewpoint injection of the spirillum of relapsing fever is advocated as more effective than malaria

C L

SCHUT (W) Over een merkwaardig lang latent gebleven geval van malaria **[A Case of Long Latent Malaria.]**—*Nederl Tijdschr v Geneesk* 1925 Nov 14 69th Year 2nd Half No 20 pp 2217–2218

What appears to be the first reported case of malaria from Vlieland Island occurred in a man of 57 with a perplexing illness finally determined on thick drop examination to be tertian malaria He denied that he had ever been in the tropics or off the island for the last 7 years but when malarial parasites were discovered suddenly remembered that he had spent three weeks in Amsterdam a year earlier

C L

BRÁS DE SA (L J) Malaria na India Portuguesa Endemia malarica no Concelho de Sanguem **[Malaria in Portuguese India.]**—*Arquivos Indo Portugueses de Med e Hist Nat* Nova-Goa 1925 Vol 2 pp 113–124 With 3 plates

DE MELLO (Froilano), BRÁS DE SÁ & DE MENEZES (Caetano Francisco) Malaria no Concelho de Sanquelim—*Ibid* pp 170–177 With 5 plates

These reports from adjacent Districts in Portuguese India show by a long series of charts and maps the local splenic index quantitative and qualitative and the anopheline breeding places in Bicholim The splenic index varies from 10 to 100 per cent

C L

SWELLENGREBEL (N. H) De Malariabestrijding in Palestina **[Antimalarial Measures in Palestine.]**—*Nederl Tijdschr v Geneesk* 1925 Sept 26 69th Year. 2nd Half No 13 pp 1422–1432 [1 ref]

Much of the information contained in this paper has already been noted in this *Bulletin* The intricacy of the work is emphasized by the existence of over 10,000 registered possible anopheline breeding places in Jerusalem, and over 3,000 in Haifa The effects which have been produced are indicated by the following reductions of the spleen rate between about 1919 and 1924, Tiberias 44 5 to 5, Saffad 69 to 17·5, Beisan 40 to 22, Jericho 60 to 35, Hebron 37 to 2, Tel el Turmas 100 to 50, Ramleh 11 to 5, Gaza 2 to 0 2, Jerusalem 47 to 1, Jaffa 6·5 to 1·4–5, Haifa 45 to 4. This antimalarial work is held up as an encouraging model

C L

YAFE (Hillel) **The Problem of Quinine Prophylaxis.**—*Harefuah* Jerusalem 1925 Apr Vol 1 No 4–5 English summary pp I–III [In Yiddish pp 163–170]

Opposing the conclusions of KLIGLER Yafe urges that the systematic ingestion of 5 to 10 grains of quinine reduces the possibility of infection with *P vivax* (MAYNE, WENYON, Vol 19, p 98), and is the antimalarial measure of primary value The exceptions are highly malarious sparsely populated districts where medical relief is adequate, and moderately malarious ones with an enlightened population Isolation, during sleep of gametocyte carriers is suggested In the meantime the malaria rate of those taking, and those not taking, prophylactic quinine should, it is urged, be compared It is, perhaps, not realized that this has not infrequently been done already

C L

i PENTMAN (I) Ein Beitrag zur pathologischen Anatomie der Malaria tertiana [**Morbid Anatomy of Tertian Malaria.**]—*Arch f Schiffs- u Trop-Hyg* 1925 Sept 1 Vol 29 No 9 pp 436–443 [13 refs]

ii KROPVELD (A) **Malaria.**—*Nederl Tijdschr v Geneesk* 1925 Aug 8 Year 69 2nd Half No 6 p 764

iii NOCHT (B) Ueber Malariabekampfung [**Antimalarial Measures.**]—*Arch f Schiffs- u Trop-Hyg* 1925 Oct 15 Vol 29 No 10 pp 461–470 [1 ref]

iv RISQUEZ (F A) Le signe du pigment hématique **Blood Pigment in Malaria.**]—*Rev Med et Hyg Trop* 1925 Sept-Oct Vol 17 No 5 pp 204–207

v AFFRE Le pouls comme moyen clinique de diagnostic entre le paludisme et l'infection du post-partum [**Distinction between Malaria and Puerperal Fever by the Pulse.**]—*Bull Soc Path Exot* 1925 Oct 14 Vol 18 No 8 pp 685–687 With 2 charts in text

vi ASCOLI (Vittorio) La terapia specifica della malaria [**Specific Treatment of Malaria.**]—*Policlinico* Sez Prat 1925 Oct 19 Vol 32 No 42 pp 1453–1461

vii UNGER (Rudolf) Erfolgreiche Behandlung einer an schwerer progressiver Paralyse erkrankten Schwangeren mit Impfmalaria [**Successful Treatment of a Pregnant Case of General Paralysis by Malaria.**]—*Med Klin* 1925 Oct 2 Vol 21 No 40 pp 1498–1500 [1 ref]

viii DUPUY Prophylaxie quinique [**Quinine Prophylaxis.**]—*Bull Med. du Katanga* 1925 June Vol 2 No 3 pp 114–115

i. Among other matters two cases of splenic rupture one spontaneous, are noted in malaria

ii. Referring to two cases of indigenous malaria with mental symptoms occurring in Holland (this *Bulletin,* Vol. 22, p. 828) Kropveld reports a third. It is emphasized that malaria is a household and children's disease.

iii. Nocht makes available for German readers the finding of the Malaria Commission of the League of Nations.

iv. Risquez claims to have been the first, in 1893, to have described pigment in the blood in malaria and holds that, if it be correct to describe the detection of pigment in the urine as URRIOLA's sign (this *Bulletin,* Vol. 21, p. 679), pigment in the blood should be designated Risquez's sign.

v. In the absence of microscopic examination puerperal fever, it is claimed, is distinguishable from malarial fever by the failure of the pulse to follow the temperature in the former; it remains rapid in spite of a fall in the temperature.

vi. The value of quinine and other cinchona alkaloids is emphasized, whatever be their mode of action.

vii. The malarial attacks did not disturb a three months pregnancy.

viii. A series of *ex parte* statements is favour of prophylactic quinine.

C. L.

BATTAGLIA (Mario). Alcune osservazioni cliniche ed anatomo-patologiche sull' infezione malarica.—*Riforma Med.* 1925. July 27. Vol. 41. No. 30. pp. 705–706.

DATTNER (Bernhard) Ueber die Bedeutung des Salvarsans als Abschluss der Malariabehandlung der progressiven Paralyse —*Klin. Woch.* 1925. Sept. 10. Vol. 4 No. 37. 1771–1774.

HAPKE (Fritz). Die Malariabekämpfung in Emden (Ostfriesland) und Umgebung —*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp 151–154.

INGRAM-JOHNSON (R. E.). Vaccine Treatment of Splenomegaly in Chronic Malaria —*Brit Med. Jl* 1925. Aug. 15. p. 293. With 3 text figs.

KLIGLER (I. J) Source of Malaria in Palestine.—*Harefuah.* Jerusalem. 1925. Apr. Vol 1. No 4–5. English summary pp IV–V. [In Yiddish pp. 173–180.]

PITTALUGA (G.). La obra social antipalúdica.—*Siglo Méd.* 1925. Aug. 15. Year 72. Vol 76. No. 3740. pp. 153–156. [1 ref.]

RODENWALDT (Ernst) Malaria und Küstenform.—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 292–304. With 5 text figs.

SPAGNOLIO (Giuseppe). Alcune modificazioni del sangue nei malarici trattati coi raggi X.—*Haematologica.* 1925. Apr. Vol. 6. No. 2. pp. 142–155.

REVIEWS AND NOTICES

RODENWALDT (Ernst) & ESSED (W F R) Untersuchungen ueber die Malaria in Tandjong Priok [**Malaria Investigations at Tandjong Priok.**—*Beihefte z Arch f Schiffs- u Trop -Hyg* 1925 Vol 29 No 4 49 pp With 19 charts & 1 folding plan

This paper contains an account of anti malarial work carried out by the authors at Tandjong Priok near Batavia In consequence of the gradual silting up of the old port it became necessary to make a new one For this a tract of low lying land was selected composed of sand dunes separated by numerous creeks and mangrove swamps the work was still incomplete in 1921 The level of the land was slightly raised by the deposit on it of dredgings obtained from the various basins of the port in many places the elevation was not more than one meter above highwater mark This was the condition of the site of the quarters known as Kampong Kodja occupied by the native personnel To the east and within half a kilometer of the coolie lines are numerous fishponds most of which contain more or less brackish water to the south there is an extensive area of old disused ricefields and to the west mangrove swamps

The unsatisfactory state of health among the coolies on the harbour works soon gave rise to much anxiety The majority consists of labourers from Batavia and Bantam who as a rule only work for a few weeks or months and return to their homes as soon as they are satisfied with the amount of their earnings it is therefore very difficult to control them Thus of 2 750 persons examined in November 1921 it was only possible to keep 250 under continual observation for 10 months Many of the coolies are already infected with malaria when they first arrive The total mortality for the three years 1919 21 averaged 81 per mille in 1921 it was 96 per mille It was evident that the great prevalence of malaria was chiefly responsible for this high morbidity The average strength of the personnel is not given but it seems to be large

A preliminary survey had established the fact that *Anopheles ludlowi* Theobald was the chief carrier and search was made for its breeding haunt At first the fishponds and old ricefields were examined and were found to contain numerous larvae Of 36 000 larvae collected about 5 000 were *A ludlowi* and of 27 000 adult mosquitoes caught in the coolie lines over 6 000 were of this species It was expected by the authors that the coolies who occupied the barracks nearest to the fishponds and rice fields would be the most heavily infected with malaria and that the numbers of adult *A ludlowi* would be largest in the same quarters the reverse was found to be the case Apparently it was only after this experience that attention was directed to the state of things close at hand in the badly constructed drains intersecting the coolie quarters These drains always contained many puddles of stagnant water in which very large numbers of larvae were caught the adults reared from these were almost exclusively *A ludlowi* The drain water was much fouled with human excreta a condition which was found to be favourable to the development of this mosquito In the laboratory there was no difficulty in rearing *A ludlowi* in tap water or even distilled water in which small pieces of meat were allowed to decompose

There are some other interesting observations on the bionomics of *A ludlowi* though perhaps none of them are quite new

Small numbers of mosquitoes were dissected at intervals during the season and the stomachs were examined for oocysts Of one batch of 13 *A rossii* Giles one was found to be naturally infected while at the same time of 94 *A ludlowi* 8 contained oocysts In all among 3 515 *A rossii* there were 12 natural infections, and among 840 *A ludlowi*, 14 infections A few other anophelines were examined at various times (*sinensis, tessellatus, barbirostris,* and *vagus*), none were found to be infected

The authors consider that the chief carrier of malaria at Tandjong Priok is *A ludlowi,* and that *A rossii* plays a part—at times a considerable one—in the dissemination of the disease they are also of opinion that the fishponds and rice fields are of little importance

The measures undertaken to deal with the endemic were on the usual lines, where ideal conditions cannot be obtained As soon as the drains were regularly treated with paraffin the incidence of malaria declined very considerably

The observations recorded in this paper only cover a period of ten months, from November, 1921, to September, 1922, the authors are perhaps unduly optimistic in attributing the undoubted improvement in the health of the community that occurred during the summer months entirely to the operations that they initiated and carried out There are many possible causes of tropical anaemia besides malaria, but the only other one to which the authors make a very brief reference is ankylostomiasis, they consider that this condition was not an active factor in the causation of the anaemia that they found, and, having dismissed this, assume that the low haemoglobin-index was entirely due to malaria They appear to pay little regard to the usual seasonal improvement in the parasite rate and haemoglobin-index of a malarious community, or to the fact that malaria is less prevalent in some years than in others It is only fair to state, however, that the improvement in the public health that began in 1922 was more than maintained in 1923, the last year of which any record is given

H. J Walton

BUREAU OF HYGIENE AND TROPICAL DISEASES.

TROPICAL DISEASES BULLETIN.

Vol. 23.] 1926. [No. 3.

LEPROSY.

MACARTHUR (W. P.). **Some Notes on Old-Time Leprosy in England and Ireland.**—*Jl. Roy. Army Med. Corps.* 1925. Dec. Vol. 45. No. 6. pp. 410–422. [20 refs.]

These notes originated in a proposed critical review of a recent work on leprosy, the brief account in which of the drastic measures taken against leprosy in Great Britain in the Middle Ages, on the authority of Sir James SIMPSON and others, are not in accordance with the studies of the author. He has read the original records of those ancient times and collected a most interesting series of notes, only the general bearing of which can be indicated here He points out that legal powers were used for segregating lepers only in the case of town dwellers, and little real segregation was actually enforced. Quotations are given to show that divorce of lepers did not often take place, and that wills might be made by permission of the master of the hospital, and the will of a leper is quoted. [Colonel MacArthur has informed the reviewer that most of the severe laws quoted in " Leprosy " from a paper of Sir James SIMPSON really apply to France and not to England.] He indicates the difficulty in obtaining accurate information regarding the prevalence and prophylaxis of leprosy in the Middle Ages, and gives instances in which various writers have erroneously quoted references to other diseases as applying to leprosy, and points out that several of the lepers' houses tabulated by SIMPSON, over 100 in all, were found by reference to the original documents to be mere alms-houses for the sick and poor, so "no alleged leper hospital can be accepted as such in the absence of definite information regarding its original destination, and further, some knowledge of the after history of the foundation." He concludes that CREIGHTON gives a reasonable estimate of the prevalence of the disease at its worst in the Middle Ages in England when he says: "There might have been a leper in a village here and there or one or two in a market town, a dozen or more in a city, a score or so in a whole diocese."

L. Rogers.

CALLENDER (Geo R) **The Leprosy Problem in the Philippine Islands.** —*Amer Jl Trop Med* 1925 Sept Vol 5 No 5 pp. 351–358. [2 refs]

The Culion settlement was opened in 1906, and about 900 persons are still admitted yearly, "but there are definite indications that segregation is accomplishing much better results than this figure indicates," for advanced cases are now rarely found, the admissions being nearly all early ones requiring care in diagnosis The Health department estimate the total number at 12,000, of whom 5,600 are isolated at Culion The average duration of the first skin lesion other than anaesthesia at the time of isolation is now 1 year and 10 months against 3 years formerly Intensive treatment was inaugurated by General Leonard WOOD in 1921 Over 4,000 were then placed under injections, since which 196 have been sent away as "cured" and 449 lepers are noted as bacteriologically negative and undergoing two years' observation period for release, "a gratifying result of the treatment methods" From personal work on the Philippine Leprosy Research Board the author states that: "It was the general opinion of the active workers that, under the conditions present, the treatment could be expected to give good results in a high percentage of the early cases, but that it was not wise to force advanced lepers to take it, and it was contra-indicated in those with tuberculosis, about 25 per cent of the leper population" The Philippine Government is spending 5 per cent of its income on health work, one-third going to leprosy, so an extraordinary effort is being made, but funds are not yet available for the all-important work of separating the children born to lepers from their parents from birth, and no less than 167 out of 396, or 42 2 per cent, children born in the settlement are either certainly or probably infected The paper ends with an appeal by the Governor-General, Leonard WOOD himself a medical man, to follow the example of the British Empire Leprosy Relief Association ' in making arrangements for a widespread effective campaign against this dread disease in India and elsewhere and he asks the American people to raise a million dollars for this purpose [This is surely a small matter for the wealthiest nation in the universe and very little more than India has subscribed during the past year for a like purpose]

L R

SHELDON (H F) **Leprosy.**—*S African Med Rec* 1925 Oct 24. Vol 23 No 20 pp 447–453 [55 refs]

At present there are six leper institutions in the Union of South Africa, but Robben Island is likely to be closed and the remaining 140 patients transferred to a better climate at Pretoria The numbers detained were in 1905, 1,491, 1910, 1,805, 1915, 2,167, 1918 2,374, 1924, 2,135

Between 1910 and 1917 the cases discharged as arrested numbered 275, but in the last three years, since leprosy has been under the Department of Health, about 1,000 have been discharged as uninfective. The yearly admissions during the last ten years have varied between 305 in 1913 and 562 in 1922, and averaged 436·5 Dr MITCHELL, Medical Secretary, has had inquiries made regarding the lepers still at large, which have been estimated by the magistrates at 1,845, while an estimate made by multiplying the average number segregated by 5, the average duration of the disease on discovery in years, works out at 2,264 If the 905 arrested cases are also added, the rate for the Union is 0·74 per mille The weak point of segregation is that it leads to concealment of the disease until infection has been spread in the family, although "it is not too much to say that all early cases of leprosy can be cured" A spot map of cases shows little leprosy in high, dry areas, which indicates the advisability of treating cases in such climates in sanatoria on the lines of tuberculosis and, better still at clinics in each district under experts on the lines of tuberculosis dispensaries, and he thinks that ' two years work of a small educational voluntary sanatorium for early lepers might alter the outlook of the Union

L R

JEANSELME Sur la prophylaxie de la lepre en France [**The Prophylaxis of Leprosy in France.**]—*Bull Acad Med* 1925 Nov 10 & Dec 15 Year 89 3rd Ser Vol 94 Nos 36 & 41 pp 963–976, 1236–1240 [2 refs]

This is the report of the Commission, composed of MM ROUX BALZER NETTER DARIER THIBIERGE and Jeanselme, appointed by the Academy of Medicine to consider this question, and it includes information regarding infections in other European countries from lepers returned from the tropics In the first place the ancient endemic focus in the Maritime Alps continues to decrease spontaneously, the 33 cases known in 1913 having now fallen to 12 five of whom are in hospital On the other hand the number of returning lepers is increasing, and is estimated at from 160 to 200 in Paris while 30 have been observed in Bordeaux and 39 in Marseilles in recent years the largest numbers come from the West Indies French Guiana Brazil and other South American States and New Caledonia With few exceptions these returned lepers have not propagated the disease in Europe only five such cases have been reported in France in recent years, five in Great Britain and Ireland in the last fifty years [three of these certainly and one other probably having been due to sleeping with a leper —L R] one in Holland one in Italy and five persons infected from one leper in Spain or a total of only 18 cases in the whole of Western Europe during several decades

After a discussion by the Academy the following prophylactic measures were advised —(1) Compulsory notification of cases the Colonial administrations being asked to notify the home sanitary authorities of the places of residence of all lepers in future (2) All lepers to be submitted to domiciliary visit with regular frequent clinical and bacteriological examinations by hygiene experts to ensure that proper prophylactic measures are carried out (3) Prohibition of the employment of lepers in handling foods clothing, hair-cutting, teaching domestic service nursing, etc (4) The provision at convenient centres of asylums for lepers under dermatological specialists and (5) Making arrangements with leprosy infected countries to prevent the return of lepers to France

L R

AUDIBERT La prophylaxie et le traitement de la lepre en Indochine [**Prophylaxis and Treatment of Leprosy in Indo-china.**]— *Ann de Med et de Pharm Colon* 1925 May–June–July–Aug Vol 23. No 2 pp 227–237

Leprosy remains a serious scourge in Indo china against which further prophylactic measures are necessary Treatment met with little success until the introduction of the ethyl chaulmoogrates, those made from *Hydnocarpus anthelmintica* (krabao) are better than those from *Taraktogenus kurzii*, and they improve the general health and heal ulcers. In addition to the provision of treatment, 4,500 lepers are now isolated in 14 leper villages and the natives themselves also practise segregation, especially in lower Laos, but there are believed to be at least 30,000 lepers in the country, and it is necessary to consider how far improved treatment allows of modifications of the old methods of prophylaxis. It is not at present considered feasible to attract the lepers voluntarily to attend regularly at dispensaries for treatment, so special hospitals are advised for this purpose. Since it is difficult to get the patients to work at cultivation at the same time in Annam the best plan has been found to be to provide attractive segregation villages, with good medical attendance in an attached infirmary, which will attract cases amenable to treatment, seven such are being provided to contain all the lepers who cannot be safely treated in their own homes. Only contagious and helpless mutilated lepers are compulsorily isolated, the others retain their liberty subject to their attending regularly for treatment. These institutions should be under the medical department and be near enough to important centres to allow of efficient treatment and bacteriological examinations. The separation of the children born to lepers is very difficult, since artificial feeding results in death unless skilled nursing is available, which is costly. The cultivation of *H. anthelmintica* is also being carried out to furnish supplies of pure oil for the treatment. [See paper by ALEXIS & MENAUT below for treatment in Indo-china.]

L. R.

MARCHOUX (E.) Unicite ou pluralite des bacilles lepreux. [**Bacillus of Leprosy: One or More?**—*Bull. Acad. Med.* 1925. Dec. 1. 3rd Ser. Year 69. Vol. 94. No. 39. pp. 1091–1092.

In view of his discovery in a young Haitian of a bacillus resembling that of leprosy but which produced, on inoculation into a white rat, a disease like rat leprosy Marchoux has made a number of experiments by inoculating fresh leprosy material into white rats and guineapigs, but with negative results except the occasional production of tubercle in the latter animals; he is continuing his efforts.

L. R.

CAPUTO (Vincenzo). La lepra in Calabria. Un altro caso di lepra tuberosa. [**Leprosy in Calabria. Another Case of Nodular Leprosy.**]—*Giorn. Ital. di Dermat. e Sifilol.* 1925. Aug. Vol. 66. No. 4. pp. 1198–1201. With 1 plate. [17 refs.]

This is an account of a woman, aged 43 years who returned to Italy after a stay of 22 years in S. Paulo. She developed nodular leprosy of the left side of the face and both arms especially the left. Antileprol was given by mouth and intravenously, but the former method was not persisted with as the patient objected to it. The injections were given in daily doses of 2 cc. of a 5 per cent. solution, 150 cc. in all, with good effects. After an interval of two months further injections were given, and the patient was able to tolerate doses of 5 cc. After another 50 cc. had been injected the nodules on the face had almost disappeared, and one at the sclero-corneal junction, which had prevented complete closure of the lids, was much reduced, while the patient's general condition had greatly improved.

H. Harold Scott

TARCHINI (P P) Contributo allo studio delle lesioni ossee nella lepra anestetica (Comunicazione preventiva) [**Study of Bone Lesions in Anaesthetic Leprosy.**]—*Giorn Ital di Dermat e Sifilol* 1925 Apr Vol 66 (Year 60) No 2 pp 451–453

This is an interesting account of the bony changes as seen by radioscopy in a man of 60 years, who had suffered from the anaesthetic form of leprosy since the age of 16. The head, thorax, pelvis, hands and feet were radiographed The most marked changes were in the extremities, especially the left foot. Here the phalanges were quite destroyed and a large part of the metatarsals, the bony change being more advanced than destruction of the soft parts Articular contracture in leprosy showed no tendency to bony ankylosis, nor after fracture was there any sign of the formation of callus The bony changes were unlike those of nodular leprosy, or of syphilis or tuberculosis, they closely resembled those of syringomyelia.

The author asks whether leprosy may lead to removal of lime salts from the bones, but thinks this improbable, also, whether the lesion is a destructive suppuration of bone, but pus-formation is rare He concludes that the cause is to be found in a neuritis of the trophic fibres, and consequent nutritive changes

H H S

BUSINCO (Armando) Su le cause di morte nella lepra (considerazioni anatomo-cliniche ed epidemiologiche) [**The Causes of Death in Leprosy.**]—*Pathologica* 1925 Oct 15 Vol 17 No 406 pp 545–550 [19 refs]

The causes of death in nine cases of leprosy on which autopsies were performed by the author proved in six instances to be pulmonary affections, either pneumonia, bronchopneumonia, or gangrene due to sepsis entering by a disorganized ulcerated larynx Other causes were sepsis by way of a trophic ulcer of the foot, terminating in meningitis, renal disease and myocarditis of leprous nature, and marasmus in a case of anaesthetic leprosy of 31 years' duration He attempted by culture and experiment to determine what part the *B tuberculosis* played in the pulmonary lesions, but without any very definite results. He shows by statistics culled from other writers that tuberculosis is returned as the cause of death in a large proportion of cases of leprosy.

H H S

BALBI (E) Colesterinemia nella lebbra [**Cholesteraemia in Leprosy.**] —*Giorn Ital di Dermat e Sifilol* 1925 Apr Vol 66. (Year 60) No 2 pp 427–435 [4 refs]

The antihaemolytic and antitoxic action of cholesterin has been demonstrated with tetanus, diphtheria, cobra venom and other poisons, while the action of tuberculin is lessened by the same substance. It has also been shown that in tuberculous patients the cholesterin content of the blood falls and rises *pari passu* with relapse and improvement The author has applied these findings to leprosy.

He estimated the degree of cholesteraemia in a number of lepers, of the nodular, anaesthetic and mixed types and found that the amount varied with the patients general state, and not with the type *per se* He also found that the administration of chaulmoogra oil increased the cholesteraemia, and he suggests that the estimation of the cholesterin content of the blood should be made use of in determining the gravity of the disease and the reaction of the patient to treatment

H H S

MARIANI (G) Nuove osservazioni sulle reazioni provocate sperimentalmente con materiale lebbroso nell uomo **[Fresh Observations on the Reactions provoked Experimentally in Man by Leprous Material.]**—*Giorn Ital di Dermat e Sifilol* 1925 Apr Vol 66 (Year 60) No 2 pp 402–426 With 3 plates

In this article the results of three main series of experiments are recorded In the first, leprous patients were inoculated intradermically with material prepared from a leprous nodule in such a way as to destroy the pathogenicity of the bacilli Alcoholic and aqueous extracts of a nodule were made by trituration, diluting with saline, and exposing to 60° C for two hours on two occasions at 48 hours' interval The final emulsion was subjected to 5 per cent antiformin for 2 hours centrifuged and diluted to a faint opalescent fluid

The results of inoculation of the aqueous antigen were variable and uncertain Cases of anaesthetic leprosy remained unaffected, nodular cases gave irregular results but on the whole analogous to those obtained by the use of 0 1 per cent tuberculin With alcoholic antigen the reaction was more intense and less fleeting but a similar effect was produced in non-leprous subjects The antiformin suspension gave results more specific than either of the others Dermal injection of avirulent bacillary emulsions gave definite reactions, which were more intense according to the depth and amount of injection

In the second series virulent leprotic material was inoculated into a non-leprous subject a man of 60 years with an epithelioma of the face The effects of the aqueous, alcoholic and antiformin extracts were either very slight or altogether negative The bacillary emulsion produced a more virulent suppurative reaction and a soft nodule the size of a grain of maize which cleared up in about 25 days Inoculations were made intradermically after scarification, and hypodermically The patient suffered from transitory attacks of fever but his general condition taking into account the epitheliomatous affection did not appear to suffer In the fifth month he complained of headache general malaise and joint pains with pruritus but repeated examination of the blood failed to show any lepra bacilli He was under observation for six months in all

A third series consisted of inoculation into leprous and non-leprous subjects of sterilized material from conditions other than leprosy, such as non-ulcerated lupus and syphilitic lesions It is not easy to see the precise value of such experiments but as might be expected, the reactions were of the suppurative and eliminative type

In all cases histological examination of the tissues at the site of inoculation were made and there are excellent plates depicting the findings

H H S.

REENSTIERNA (M. J) Reproduction expérimentale de la lepre chez les singes inférieurs [**Experimental Reproduction of Leprosy in the Lower Monkeys.**]—*C R Acad Sci* 1925 Nov. 23 Vol 181 No 21 pp 828–830 [1 ref]

The material from several young leprous nodules, proved free from tubercle bacilli by inoculation into guineapigs, has been injected into three Chinese Bonnet monkeys (*Macacus sinicus*) and into nine *Macacus rhesus* under the skin and into the nasal mucous membrane, and in one animal into the testis, two of the monkeys being again inoculated from another leper nine months later After an incubation period of 37 to 45 days three of the Bonnets developed several nodules from the size of a pea to that of a plum on the skin and one in the testicle, and two inoculated a second time showed nodules after 19 to 22 days The nodules persisted for 40 to 62 days, and in one case up to seven months and resembled in colour those of human cases When at their full development five more monkeys were inoculated from the first nodules, but two died and the other three remain free from signs of the disease Microscopical sections of nodules showed numerous acid-fast bacilli arranged in bundles like those of leprosy, together with histological changes like those of leprosy, large cells containing many bacilli being seen in some sections, and he concludes that he has produced leprosy in the lower monkeys by inoculation

L R

RODRIGUEZ (Jose N) **The Disturbances of Cutaneous Sensibility in Leprosy.**—*Philippine Jl Sci* 1925 Aug Vol 27 No 4 pp 455–481 With 1 text fig [32 refs]

The writer states that as far as he is aware, HOPKINS is the only worker who has studied sensation in leprosy in the light of the investigations of HEAD and RIVERS, with inconclusive results, so he records in this paper his own researches on the subject [He appears to be ignorant of Professor MONRAD-KROHN'S book on the subject and the paper of K K CHATERJI in the Proceedings of the Calcutta Leprosy Conference of 1920] He records the result of a careful study of 200 cases of leprosy with 800 neurological examinations, which have led him to the following conclusions —

1 Not all the cutaneous lesions of leprosy are anaesthetic Sixteen per cent of infiltrations do not show any disturbance of the cutaneous senses

' 2 The anaesthesia of leprosy is fickle and variable, several examinations are necessary to determine its real extent and character

" 3 Distinction should be made between the sensory disturbances in the skin lesions and those independent of all cutaneous manifestations

" 4 The character of the anaesthesia depends on whether it is located in a macule an infiltration or a skin free from lesions In macules there is as a rule early loss of epicritic sensibility in nodules and infiltrations the anaesthesia is very variable, and in a skin free from eruptions a partial dissociation of the syringomyelic type is effected These differences suggest the possibility that the cutaneous nerves may be involved in various ways, depending on the character of the overlying skin lesion

" 5 The anaesthesia shows definite improvement under ethyl ester treatment although, as is to be expected it is not as well marked as the improvement in the cutaneous lesions

' 6 In countries where leprosy is endemic the possibility of this disease should always be considered in every case presenting symptoms of paraesthesia such as numbness prickling formication etc

"7. Although the absence of anaesthesia does not exclude leprosy, the touchstone in doubtful cases, from the clinical standpoint, is its presence in some cutaneous lesion or in some skin area.

"8. The final confirmation of the diagnosis is the presence of the specific organism in the lesions or on the nasal septum"

L. R.

TSCHERNOGUBOW (N. A.) & PAWLOW (N. F.). Zur Klinik der Lepriden. Ein Fall von Lichen leprosus. [**Clinical Study of the Leprids. A Case of Lichen Leprosus.**]—*Dermat. Woch.* 1925. Dec. 5. Vol. 81. No. 49. pp. 1771–1776. With 1 text fig.

The authors give a full history of a case showing changes of the skin, produced by the vital activity of lepra bacilli, similar to analogous changes that are produced by *Spirochaeta pallida* in Lichen syphiliticus. They therefore claim it as a genuine leprid which they propose to call Lichen leprosus. The condition resembled the lichens of various other aetiologies (L. scrofulosorum, L. syphiliticus, etc.) not only in the clinical, but also in the histological picture. One peculiarity of the rash, its slight visibility to the naked eye, also characterizes to a certain extent the other rashes belonging to the "lichen" group (especially L. scrofulosorum).

L R.

URBINO (G.). Le traitement chimiothérapique de la tuberculose et de la lèpre. [**Chemotherapy of Tuberculosis and Leprosy.**]—*Presse Méd.* 1925. Oct. 7. Vol. 33. No. 80. pp. 1332–1334. [18 refs.]

This paper deals mainly with cuprocyanides in tuberculosis and leprosy, and states that MATTA and DEVOTO have treated 20 cases of leprosy in Italy by this preparation intravenously with remarkable improvement, not less than that obtained with chaulmoogra oil and antileprol. The results are thus in agreement with the earlier Japanese trials of this preparation, absorption of nodules, breaking down of the bacilli and improvement in the general health of the patients being noted. Two milligramme doses are given every other day up to 22 to 36 injections.

L R.

DENNEY (Oswald E), HOPKINS (Ralph), WOOLEY (Jerald G) & BARENTINE (Boyd G.). **The Administration of Mercurial Preparations in Leprosy. Preliminary Report I.—Mercurochrome Soluble 220.**—*Public Health Rep.* 1925. Aug. 28. Vol. 40. No. 35. pp. 1795–1808. With 4 plates. [7 refs.]

Mercury preparations have from time to time been reported as having a favourable action in leprosy, and in March, 1924, YOUNG & HILL reported good results from intravenous injections of mercurochrome in septicaemia, so this drug was tried in a leper with gangrene of one foot with temporary improvement in the local condition; 44 lepers were then put on the treatment, 20 being advanced active cases, 16 with moderately advanced active symptoms, 6 early active ones, and 2 with no signs of activity as controls. At first 5 milligrammes per kilo weight was the dose, but as this was found to produce very severe febrile reactions it was reduced to 2·5 milligrammes per kilo of a standard 1 per cent solution of mercurochrome in freshly distilled and autoclaved water, prepared for each day's use, and injected intravenously once a week, and continued for over a year.

	Un-changed	Slight improvement	Moderate improvement	Marked improvement
Results ..	7	6	6	16

The cases showing marked improvement are described, either great improvement in the general health or subsidence of certain leprous manifestations occurring Illustrations of four cases show diminution of the nodules or healing of ulcers, very definite improvement in some of the secondary lesions was early apparent with healing of nodules and cleaning up of ulcers, and occasionally softening and absorption of nodules, but trophic ulcers responded more slowly, and symptoms referable solely to advanced anaesthetic leprosy were not appreciably affected An interesting point is that in approximately half the cases previously showing occasional attacks of leprous fever sometimes after two or three injections the febrile reactions were modified by a sharp decline of the temperature within 12 hours and almost complete failure of evanescent nodules to appear and in a few cases the reactions have not recurred The general health improved most during the first few months but less rapidly later In cases with pulmonary tuberculosis no good and possibly some harm, resulted The trial is being continued and the effects already obtained in some advanced cases raises the hope that this drug may prove of definite value

L R.

LEGENDRE (J) Essai de traitement de la lepre par "l'eparseno ou preparation 132 du Dr Pomaret **[Trial of Eparseno in Leprosy.]**—*Ann de Med et de Pharm Colon* 1925 May June-July-Aug Vol 23 No 2 pp 347-350

The writer treated four cases of leprosy in Madagascar with eparseno in as large doses as the patients would stand one showing serious toxic symptoms and observed a certain amount of benefit in improving the general health and lessening pains The results so far have been sufficiently definite to make the patients desirous of continuing the injections

L R

VAN DEN BRANDEN (F) L éparseno ou préparation 132 du Docteur Pomaret dans le traitement de la lèpre **[Eparseno in the Treatment of Leprosy.]**—*Bull Soc Path Exot* 1925 July 8 Vol 18 No 7 pp 514-516

The doses recommended by CHARTES and HASSON could not be borne by the patients but in the doses used in four patients some temporary clinical improvement with healing of ulcers and fading of macules was obtained The improvement, however, was not maintained, and new lesions appeared in some after a prolonged course, so the treatment failed

L R.

DELAMARE (G). Deux cas de lèpre mixte éparséno-résistante **[Two Cases of Mixed Leprosy resistant to Eparseno.]**—*Progrès Med* 1925 June 13. No 24. pp 896–901. [4 refs]

The writer reports two typical moderately-advanced cases of mixed leprosy, one with a positive and one with a negative Wassermann reaction, in both of which eparseno, pushed to produce toxic symptoms, failed to produce any alleviation of the condition, although severe reactions were caused, and he concludes that the drug has no specific action in leprosy He advises its use in moderate doses only in cases complicated by syphilis, as he considers this arsenical preparation of no more value in leprosy than its predecessors 606 and 914

L R

AOKI (T) **The Value of Iodin in the Diagnosis and the Treatment of Leprosy.**—*Japan Jl Dermat & Urol* 1925 Sept Vol 25 No 9 English summary pp 95–96 [In Japanese pp 724–767]

The writer reports on the intravenous use of sodium iodide in a 5 per cent solution beginning with about 1 cc, and increasing the dose at five-day intervals, as a diagnostic measure Of 22 cases 8 with papular eruptions reacted to doses of under 10 cc and 12 out of 14 macular and mixed cases reacted with doses under 20 cc, 1 to 28 and 1 to 32 cc, while 22 uninfected patients showed no reaction to doses of more than 40 cc he regards it, therefore, as of diagnostic value As a rule, a general reaction is observed within a few hours with slight fever to at most 38° C and feeling of burning in the face with weakness dullness and headache He also regards the drug as of curative value if carefully regulated to produce slight reaction in each case overdosage may do harm by setting free the bacilli, 10–14 days intervals are allowed in treatment

L R

ALEXIS (M. L) & MENAUT (B) Recherches sur le traitement de la lepre par le krabao (*Hydnocarpus anthelmintica*, Pierre) **[The Treatment of Leprosy by Krabao** (*H anthelmintica*)**]**—*Ann de Med et de Pharm Colon* 1925 May–June–July–Aug Vol 23 No 2 pp 201–226 [1 ref]

In 1907 it was found that some lepers in Cambodia had improved under an indigenous treatment, the principal ingredient of which was krabao, the kernels of the seeds of *H anthelmintica*, which grows wild in Indo-china and neighbouring countries Laboratory investigations of the seeds have therefore been made, the whole of the kernels, and not only the oil pressed from them, having been taken as the basis, and ethyl esters of the fatty acids have been made in much the usual way, details of which are given Unripe seeds contained a definite amount of hydrocyanic acid, but only a trace was found in the ripe ones. Notes of seven cases treated by this preparation are given, final conclusions being reserved for a fuller trial, but the authors think that krabao seeds furnish more active preparations than true chaulmoogra oil from Taraktogenos, confirming the opinion of L ROGERS with regard to the superiority of Hydnocarpus oils, the action is specific with general improvement in health and reduction or disappearance of nodules, the most rapid results following slight febrile reactions. [The work of TRAVERS on *H. anthelmintica* seeds orally in Malaya and of Government workers in Siam with the ethyl esters from the same is of interest in this connexion.]

L. R.

CALCAGNO (Oreste). Acidos grasos del aceite de bacalao y chaulmoogra en el tratamiento de la lepra y tuberculosis. Contribución a su estudio. [**Cod-Liver Oil and Chaulmoogra in Leprosy and Tuberculosis.**]—*Semana Médica.* 1925. Dec. 3. Vol. 32. No. 49. (1664). pp. 1435–1449. [24 refs.]

This is a difficult article to abstract. It is written in a diffuse style, point after point is brought up and dropped before decision is reached, and there is no summary or list of conclusions to direct the reader as to the aim of the author. It would appear that, being struck by the varying results from the use of the fatty acids of cod-liver oil and chaulmoogra, he decided to examine various preparations and estimate quantitatively the total and relative amounts of the active constituents in each These, when separated, were tried *in vitro* on cultures of Koch's bacillus, and it was generally found that cod-liver oil had no effect on the growth of the organism, nor on its acid-fast properties Esters and other derivatives were made, but these also yielded negative results. Since, however, in some patients excellent effects are obtained, it is stated that these are due to the vitamins present. As regards chaulmoogra oil the varying reports are due to the differing amounts of active constituents present in different plants. By mixing several a fairly uniform preparation was obtained, and the efficacy seemed to depend upon the mixture, which had a nearly fixed melting point at about 60° (and not below 42°) which was found to contain hydnocarpic acid 28–32 per cent., chaulmoogric acid 2·8–4·6 per cent.

There is a long list of conditions, chiefly pulmonary, in which benefit resulted from its use, but no figures are given.

[The writer's supposition that these substances owe their therapeutic action to vitamins is incorrect, for Professor DRUMMOND tested this for me in the case of sodium morrhuate, and found it to be free from vitamins —L.R.]

H. Harold Scott.

PALDROCK (A.). Der Leukozytensturz bei Leprosen. [**Leucopenia in Lepers.**]—*Dermat. Woch.* 1925. July 4. Vol. 81. No. 27 pp. 998–1005. [9 refs.]

Intracutaneous injection of various substances produces in individuals with normal skin a reaction manifesting itself in leucopenia. In dermatitis the skin is unable to produce this reaction. Paldrock found that the application of CO_2-snow, which he uses in his method of treating leprosy, produces a violent reaction of this kind in people with healthy skin. In early cases of leprosy the skin is still capable of producing the reaction, but in a diminished degree. More advanced cases react with variations of the blood-picture. In long-standing cases there is a reaction in the opposite direction, viz., an increase in the number of leucocytes.

L. R.

PALDROCK (A.). Zur Chemie des Lepraerregers. II. Mitteilung. **[The Chemistry of the Leprosy Germ.]**—*Dermat. Woch.* 1925. Sept. 26. Vol. 81. No. 39. pp. 1431–1433.

The granules of leprosy germs contain lipoids and lipoproteids which can be rendered visible by stains of the fuchsin series, if the staining has been preceded by a 12-hours' preliminary treatment with 10 per cent. aqueous solution of saltpetre. Lipoids can be removed from the leprosy germs by allowing them to remain for 24 hours in ether. In that case the granules stain with fuchsin no longer brownish red, but red, with Victoria blue no longer dark blue but light blue, and with Gram's stain not black, but blue.

Smear preparations treated with nitric acid have also given up their lipoproteids, and they are therefore (with fuchsin and Victoria blue staining) only with difficulty rendered visible and appear gram-negative; erythrosin, however, gives an intense red colouration, a proof that the leprosy germs contain basic albumin in granules as well as in bacilli. Basic albumin gives gram-negative staining of the granular and bacillary leprosy germs. Granules of the leprosy germs containing lipoproteid stain blue, and, if they also contain lipoids, black; they are therefore gram-positive.

L. R.

PALDROCK (A.). Der Komplementverbrauch bei Kohlensäureschnee Behandlung der tuberösen Lepra. **[The Complement Consumption in the CO_2-Snow Treatment of Nodular Leprosy.]**—*Dermat. Woch.* 1925. Oct. 3. Vol 81. No. 40. pp. 1456–1460.

In contradiction to ELIASBERG'S statements, Paldrock found not only that lepers have free complement in the blood, but that the amount of complement may even be greater than that of normal human serum. Treatment with CO_2-snow caused a consumption of complement, and lepromata on remote parts of the body that were not subjected to treatment disappeared, facts which the author claims as proof that antigens are set free and that the CO_2-snow treatment of leprosy is an active immunization.

L. R.

PALDROCK (A.). Die Senkungsreaktion bei Lepra. **[The Precipitation Reaction in Leprosy.]**—*Arch. f. Dermat. u. Syph.* 1925. Aug. 31. Vol. 149. No 2. pp. 272–276.

In nodular leprosy there is extreme acceleration of precipitation of the erythrocytes. In anaesthetic leprosy acceleration is present, but considerably less. In long standing cases the acceleration of precipitation is greater than in fresh cases. The application of CO_2-snow also causes an acceleration of precipitation in healthy persons, and in lepers it increases still further the acceleration already produced by the leprosy. Four days after the CO_2-snow treatment there is a retardation of precipitation, which again accelerates 7–10 days after treatment. Paldrock explains the acceleration produced by the CO_2-snow as follows: The physical structure of proteins is changed by freezing. When lepromata are congealed by means of the CO_2-snow at —78°, an alteration in the equilibrium of the colloids is produced both in the tissue and in the leprosy germ and surrounding medium;

they undergo a displacement in the direction of coarse dispersion. These decomposition products of the cells and proteins produce after their resorption a change of stability in the plasma, which is manifested in an altered acceleration of precipitation.

L. R.

HEINEMANN (M.). Ueber die von Muchow und Levy angegebene Leprareaktion. [**The Leprosy Reaction described by Muchow and Levy.**]—*Dermat. Woch.* 1925. Oct. 3. Vol. 81. No. 40. pp. 1455–1456.

MUCHOW and LEVY's serodiagnostic reaction was applied in 8 lepers and in 15 patients showing no signs of leprosy. All 8 lepers reacted positively, but 4 of the control cases also reacted positively.

L. R.

BREDA (A.) La lepra è contagiosa.—*Giorn. Ital. di Dermat e Sifilol.* 1925. Apr. Vol. 66. (Year 60.) No. 2. pp. 435-451. [11 refs.]

PELLAGRA.

Watson (G. A.). **Pellagra.**—*The Eleventh Annual Report of the Board of Control for the Year 1924. Lunacy and Mental Deficiency.* pp. 122–128.

This report summarizes the enormous amount of work done upon pellagra cases occurring in the Lancashire County Mental Hospital, Rainhill, during the last 12 years. There is also contained an account of the author's original theory of the etiology of the disease, which will not here be discussed, as it was presented fully in the abstracter's last pellagra review (this *Bulletin*, 1925, p 544) from a personal communication of the author himself.

The following observations are particularly worthy of note —

1. The material consists of 54 cases, 15 males and 39 females Of these 47 ended fatally, and autopsy with extensive microscopical examination was made in 33 of them.

2. Unlike outbreaks of the disease occurring in other places, it is noted that pellagra in British Mental Hospitals is of an extremely severe type, for most of these cases which ended fatally died as a result of the disease itself, and it is doubtful if any have completely recovered.

3. Several of the cases were admitted to the hospital already presenting signs of the disease, while others actually developed it while in hospital, the longest antecedent period of residence being 27 years.

4. Wilson's statement that nearly every case of pellagra can be cured by rest and improved diet does not apply to the Rainhill cases.

5. The author is emphatically of the opinion that in his cases food deficiency played no part in the etiology, because :—

(*a*) "If a defective hospital diet were the essential cause of pellagra, it seems strange that in so many of the old residents who have been attacked manifestations of the disease should have been so long delayed

(*b*) "There was practically no restriction of the Rainhill Hospital dietary during the war period until March, 1917 ; yet 23 out of the total number of 54 cases observed up to the end of 1924 showed their first symptoms during the years 1913 to 1916, and others early in 1917 before restrictions came into force During the years 1918 to 1921 inclusive (when the diet was still restricted), only two new cases were diagnosed, and no case at all in 1919 and 1920 Early in 1922 a much improved general hospital diet was instituted, especially as regards protein, but during that year a larger number of cases of pellagra occurred than in any previous year."

6. In these cases no differences were found between the intestinal flora of the pellagrins and of the general hospital population. A careful search was made for the *B. welchii*, but always without result. There was no connexion between helminthiasis and the disease. Though dysentery occurred in the hospital at the same time as pellagra, patients suffering from this disease were not found to be specially liable to that.

7. No connexion was evident between inanition and cachectic states on the one hand and pellagra on the other.

8. "There has been no evidence at Rainhill to justify a suggestion that the condition arises more frequently in wards containing patients who are faulty in habits, as has been stated by American observers."

9. The more important pathological findings may be summarized

thus. In the nervous system the most prominent and constant feature is the central neuritis of Adolf MEYER, this being present in all but two of the fatal cases (these were complicated by general paralysis). The granules of Reich were commonly found in the peripheral nerves but there was no evidence of neuritis and no special lesion in the sympathetic nervous system. Chronic nephritis was found slightly more often in these cases than in the general asylum population. The pancreas and parotid glands were not specially affected.

10. The author is convinced of the close association between pellagra and central neuritis, and he suggests that some form of endocrine imbalance may be one of the etiological factors concerned in the production of certain cases of both conditions. He concludes his report as follows :—

> "It is assumed that in the cases of pellagra included in this series there is a congenital defect in the make up of certain nerve cells, especially those of the cerebral cortex, but not of these only. This defect lies chiefly, although not entirely in a certain region and at a certain level, viz., in the central region and at the level of the Betz and homologous cells and the larger pyramids. It would, perhaps, be difficult to imagine a greater contrast in pathological appearances than that presented by an uncomplicated case of pellagra with central neuritis and one say of general paralysis with dementia, not only as regards the difference in the amount of inflammatory reaction, but also in respect to the level of the cortical nerve cells involved in the two conditions."

A. D. Bigland.

MILLER (R. S.). **The Problem of Pellagra.**—*American Med.* 1925. Apr. [5 refs.] [Author's Mimeographed copy, 5 pp. f'cap.]

This observer, Director of the Hospital for the Insane, El Khanka, Egypt, relates examples of pellagra outbreaks in which food deficiency could not have been the main factor. He points out that the agricultural labourer in Egypt, the fellah, has for his diet "an out-and-out carbohydrate monophagism." Many of the fellahin suffer from pellagra, but, again, a great many do not, and thus protein deficiency cannot be the sole cause of the disease.

A remark by BALFOUR in BYAM and ARCHIBALD'S Practice of Medicine in the Tropics, viz., "it is possible that a sameness in the diet may tend to exhaust the particular juices required for its digestion," gave the author an inspiration as to a possible cause of pellagra. The juices, which in the fellahin should be found to be lacking if this statement is true, would be ptyalin, amylopsin, maltase, lactase and invertase. The fact that the parotid glands are hypertrophied in some cases of pellagra suggests that an attempt is being made to increase the output of ptyalin, and that this is a compensatory hypertrophy to make up for a deficiency of carbohydrate-splitting ferments elsewhere in the body. The achlorhydria commonly noted in the disease will, by hindering the formation of secretin, diminish the flow of the pancreatic juice with its contained amylopsin. "Of the other juices, maltase, lactase and invertase, it is sufficient to say that considering the state of the small intestine in pellagra, no one would expect them to be present in the usual quantities."

The resulting deficiency in carbohydrate katabolism leads to (1) Little glycogen being stored in the liver, and (2) the intractable diarrhoea of the disease.

These observations lead the author to the belief that pellagra is "an enzyme deficiency disease disturbing the sugar metabolism of the body," and that the poor glycogen content of the liver, being reduced still further by cold and hard manual labour, accounts for the late winter and spring incidence of the disease.

A detailed and perhaps somewhat far fetched comparison is drawn between diabetes and pellagra. It is pointed out that the two outstanding dextrose-containing articles of diet in the world are alcohol (in the form of wines and beer) and fruit, and that both these articles are practically never consumed by the fellahin.

In conclusion, the suggestion is made that the decrease in the disease during the last twenty years in Northern Italy can be explained by the enormous increase in retail wine shops in that region. The author even goes so far as to suggest that the "dryness" of America is associated with the abundance of pellagra in that country.

A. D. B.

LEE (C. U.). **Pellagra in China: Some Recent Views on its Aetiology.**—*Nat. Med. Jl. China.* 1925. Apr. Vol. 11. No. 2. pp. 65–74. [15 refs.]

Up to the year 1923 pellagra was, apparently, unknown in China. In that year six cases were reported as occurring in Shanghai and one in Wuhu. Whether pellagra actually was not present before this must remain an open question, especially when one recalls the history of similar so-called initial outbreaks in other countries. The Chinese live upon a diet very deficient in protein and so, according to the author, the disease should be common if amino-acid deficiency is a cause. An account is given of the various schools of thought in pellagra etiology, and it is pointed out that even the adherents of the infection theory admit that diet plays an important rôle. In conclusion, it is suggested that possibly the universal use of soy beans among the Chinese accounts for the rarity of pellagra in that country.

A. D. B.

WILSON (R. M.). **Pellagra in Korea.** [Correspondence.]—*China Med. Jl.* 1925. July. Vol. 39. No. 7. pp. 661–662.

The writer is in charge of a large leper colony in Korea. In 1924 the inmates developed what, from the clinical description, was undoubtedly pellagra. During the summer of 1924 the condition became worse but disappeared in the winter. In the spring of 1925 it reappeared.

The Colony being run as a charity, great economy has to be practised. The diet is somewhat deficient, having rice and vegetables as its main component with a limited amount of protein, beans and barley. Meat is only bought about once a month. It is thought, therefore, that some food deficiency is the cause of the outbreak, but the writer has had seventeen years' experience of medical work in Korea and has never seen a case of pellagra before. He asks, "Is it possible that we have here an infection that has been brought into the country in some way?"

Practically all the cases responded to treatment with meat, pork being found particularly effective.

A. D. B.

DRUMMOND (J.). **Pellagra in South Africa.**—*S. African Med. Rec.* 1925. Sept. 26. Vol. 23. No. 18. p. 413.

The author published in 1913 an account of a fatal case of pellagra in a South African native. Twelve years later another case, also fatal, occurred in his practice. The patient was a Sister belonging to a Roman Catholic Institution. No account of the diet or etiology is given except that an attack of dysentery preceded the onset of the disease. From the description the diagnosis is undoubtedly pellagra.

Having seen these two cases the author asks : "Are we missing cases or must we assume that the condition is rare in South Africa ?"

A. D. B.

HUDSON (L. B.). **Unrecognized Pellagra, a Serious Surgical Handicap.**—*New Orleans Med. & Surg. Jl.* 1925. Oct. Vol. 78. No. 4. pp. 242–246.

Three cases are described in which surgical operations were performed on pellagrins undiagnosed at the time. All were women and all ended fatally. The brief record of the cases is as follows :—

Case 1.—Operation—appendicitis, puncture of ovaries with fixation of the uterus. Eight days later vomiting, soreness of the tongue, nervous and mental symptoms followed. There was no skin lesion. Death occurred six weeks later.

Case 2.—Supra-vaginal hysterectomy with removal of left ovary tube and appendix. Eight days later exactly similar signs to those met with in the first case were noted She lived about two months. There were no skin lesions throughout.

Case 3.—Hysterectomy and appendicectomy. Shortly afterwards the case presented symptoms exactly similar to the above ; again there was no rash. This patient lived for four months.

The author regrets having operated upon these cases and warns other surgeons to be on their guard against such catastrophe. [In the opinion of the reviewer, however, no blame attaches to the surgeon, as there was no evidence of pellagra before the operation, and even after, without any skin lesions, the diagnosis must remain sub judice.]

A. D. B.

CARRANCÁ Y TRUJILLO (Ramón). Pelagra y Vitaminas. El valor terapéutico del Maiz germinado. [**Pellagra and Vitamins. The Therapeutic Value of Germinated Maize.**]—*Rev. Méd. de Yucatan.* 1925. Apr. June & Aug. Vol. 13. Nos. 6, 7 & 8. pp. 148–153 ; 168–174 ; 196–198.

The first two sections of this article are taken up with a general review of pellagra and the theories of its causation, tending to show the influence of lipo-soluble vitamins, or rather the effect of a defective diet in which these are particularly wanting. For the past two years the author has employed maize which, by being kept in a moist atmosphere has been allowed to germinate ; it is then washed and made into a paste to which cold water and sugar are added. 50 gm. of maize in this form is taken daily throughout the treatment. The results are said to be very favourable except in advanced cases when nervous symptoms have appeared.

H. Harold Scott.

Ornstein (I.). La cholestérinémie dans la pellagre. [**Cholesteraemia in Pellagra.**]—*C. R. Soc. Biol.* 1925. Sept. 30. Vol. 93. No. 28. pp. 793–795.

Cholesteraemia has been studied in many conditions but not as yet, according to the author, in pellagra This research seemed to be called for on the ground of the possible connexion between adrenal insufficiency and pellagra on the one hand and between cholesteraemia and the adrenal glands on the other. Thirty-five cases were studied, of which twenty-five were males and ten females They represented all stages of the disease. The findings are as follows —

Hyper-cholesteraemia	68·6 per cent.
Hypo- „	17·1 per cent.
Normal „	14·3 per cent.

These results are not in accordance with the hypothesis of adrenal insufficiency in pellagra The author is of the opinion that the hyper-cholesteraemia can be explained by a disintegration of tissue in pellagra comparable to what obtains in old age and by the excess of lipoids found in certain organs by many observers

A. D. B.

Goldberger (Joseph), Wheeler (G A) & Tanner (W. F). **Yeast in the Treatment of Pellagra and Black Tongue. A Note on Dosage and Mode of Administration.**—*Public Health Rep* 1925 May 8. Vol 40. No 19 pp 927–928. [1 ref]

This is a further report upon the beneficial effect of dried brewer's yeast in pellagra A second series of cases has been treated by this remedy, and all, with one exception, made a prompt recovery

In their original communication the authors recommended a dose of one gramme per kilo of body weight for those with active symptoms of the disease Now the daily dose is fixed at 15 to 30 grammes of the dried yeast, or roughly two level teaspoonfuls, three to six times a day. The yeast is usually given in table syrup, less frequently in canned tomato juice and in milk In addition to the above, dietary treatment should be carried out

In dogs suffering from the affection known as black tongue yeast proved very effective in cutting short the attack It must be given early in the disease

The paper concluded with these words —"It may be well to emphasize that in all but the severe cases of pellagra careful feeding is all that is needed In our judgment, it is only in cases of more than average severity, or where such foods as fresh milk and fresh meat cannot be procured, that yeast may serve a valuable purpose and may help to save life"

A. D. B.

Owensby (N M) "**Yeast in the Treatment of Pellagra.**" [Correspondence]—*Jl. Amer Med Assoc.* 1925 July 18. Vol. 85. No 3. pp 212–214

The writer of this letter apparently feels aggrieved that Goldberger's treatment of pellagra by yeast has been emphasized in the *Journal of the American Medical Association,* whereas his own work published previously dealing with the good effect of vitamin B extracts on this disease was overlooked.

The Editor in reply assures the writer that his Journal has no desire to fail in giving credit where it is due. He then proceeds to criticize the work of each. Of Owensby's work (*M.J. & Rec.*, Oct. 15, 1924) dealing with the treatment of pellagra with tomato juice, raw cabbage, lettuce, and the water in which vegetables have been cooked, the Editor remarks that it can scarcely be classed as a scientific report. On the other hand, GOLDBERGER and his colleagues of the U.S. Public Health Service have changed their ground so often in recent years that though scientific knowledge must increase and change year by year it behoves us not to lay too much stress at the moment on any particular pronouncement of these workers.

A. D. B.

NATIVE DIETARIES

McCarrison (Robert). **The Relationship of Diet to the Physical Efficiency of Indian Races.**—*Practitioner.* 1925. Jan. Vol. 114. No. 1. (No. 679) pp 90–100.

In the opening paragraph the author, in remarking upon the great differences in physical efficiency of different Indian races, makes this statement —"So great is the contrast betwen certain stalwart, vigorous and resolute peoples of the North and certain poorly-developed and toneless inhabitants of the South and East, that the question arises—why should there be these great differences between one race and another ?"

The answer to this question resolves itself mainly into a discussion of the various diets in India The vegetable kingdom supplies most of the food throughout the country, viz , rice, wheat, barley, maize, millet, legumes, vegetables and fruit Milk, eggs and meat are rarely, if ever, used by the masses of the people It is seen, therefore, that the staple food consists of ' those parts of plants which have the function of storage tissues " "These are deficient in at least three dietary factors All contain protein of relatively poor quality , all contain too little of certain mineral elements, especially calcium, sodium and chlorine, and all are deficient in fat-soluble vitamin A "

The physical efficiency of the various Indian races depends upon the extent to which this basal diet of the country is supplemented by food to make good its deficiencies Such supplementary foods are meat, milk and its products, leafy vegetables and fruit The more use is made of these the greater is the physical efficiency The splendid physique of the Sikhs, the Pathans and the people of Hunza is an example of this contention.

Not only are these statements true as regards physique but also as regards disease and immunity thereto This applies to infectious conditions as well as to the so-called food deficiency diseases

In short, it may be stated that those races of India which carefully correct the deficiency of the basal diet show the finest physique and the greatest freedom from disease The author concludes by hinting that what is true of India is true also of Europe

A D B.

Halliday (H) **Diet in the Tropics.**—*Practitioner.* 1925 Jan. Vol 114 No 1 (No 679) pp 101–108

The great majority of the 23 millions of people who inhabit the great plains of the Punjab and its Himalayan mountain tracts are engaged in agriculture and their food, speaking generally, is what the fields produce Rice in the plains is only a luxury and even in the hill districts where it is a staple article of diet the only treatment it receives is "pounding " The chief constituents of the diet are whole meal bread and dâl Meat, even when allowed by religion, is a luxury, but abundance of raw fruit is eaten all the year round

Presumably as a result of this diet the natives are singularly free from disease The author states "in an experience of 22 years' surgery in the Punjab I have found the following diseases very uncommon :—Appendicitis, gastric and duodenal ulcer, acute cholecystitis, gall stones and their sequelae, and, finally, cancer in all its forms." The rarity of acute rheumatism, chorea and endocarditis is remarkable when it is remembered that among the Himalayan peasantry the women work for hours in the flooded rice fields in the steady downpour of the rains.

Arguments are produced to show that the rarity of cancer is not due to the people failing to come to hospital nor to the fact that they may not reach the cancer age, as has been suggested, but rather to the effect of correct diet.

A. D. B.

GAUDUCHEAU (A.) Sur la nourriture naturelle de l'homme d'après l'observation d'usages alimentaires exotiques primitifs. [**The Natural Diet of Man as shown by Primitive Food Habits in the Tropics.**]—*Bull. Soc. Path. Exot.* 1925. May 13. Vol. 18. No. 5. pp. 368–377. [1 ref.]

The statement is made that when the authorities in the Tropical French Colonies attempt to draw up rations for the native populace more or less grave troubles always follow due to deficiency of certain articles of diet. Examples are given in proof of this statement. The deficiency is sometimes quantitative in respect of calories, but the chief error is probably qualitative and concerns the accessory food factors.

The Chinese and the Annamites drink hot tea and eat hot rice. This is a tradition rigorously upheld and is not departed from even in the hottest of weather. The author is of the opinion that the cooking of the food may destroy some of the vitamins. This fortunately is counteracted by the custom of serving with the rice a large series of small dishes consisting of plants, animals, organs and viscera, etc. Even the poor observe this custom, though, of course, on a smaller scale.

As an example of how a native's natural diet can be more efficient than that arranged for him by a foreign authority the author gives the following interesting instance. When all therapeutic measures to combat the weakness and depression preceding and accompanying beriberi have failed. the simple expedient of sending the native back to his own village and dietary has resulted in his returning completely cured in a month's time.

In order to improve the diet of the natives in French Tropical Colonies attempts are being made to encourage them in the cultivation of the land, the rearing of sheep and in the improvement of the fisheries. Though it is realized that the successful carrying out of such measures would necessitate a change in the character of the native race, nevertheless the author is of the opinion that this, up to a point, can be done, and done economically.

The ever interesting topic of the effect of diet upon race is discussed and the differing characteristics of the meat eaters and herbivores are contrasted. He instances the great improvement in the natives of Madagascar and Indo-China who after enlistment in the Navy and other Services are put on French military diet, viz., bread, meat, wine and fresh vegetables.

Having found that a mixture of fresh blood and yeast improves the health and vigour of animals he proposes to use this upon blacks "to complete their insufficient diets and to combat their apathy."

A. D. B.

ROSÉ (E.). Etude sur la fabrication et la composition chimique du nuoc-mam (extraits). **[The Manufacture and Chemical Composition of Nuoc-mam.]**—*Ann. de Méd. et de Pharm. Colon.* 1925. Jan.-Feb.-Mar.-Apr. Vol. 23. No. 1. pp. 5-20. [8 refs.]

In 1916 the Governor-General of Indo-China issued an order defining the composition of Nuoc-mam. This step became necessary owing to various frauds perpetrated with respect to this substance. Nuoc-mam is described as a condiment and as the national food of the Annamite. It is made by macerating fish in a concentrated solution of sea salt. It is essentially a salty solution of amino-acids. Its colour is yellow to yellowish-brown and it has a slight fishy odour.

The order relative to the sale and circulation of nuoc-mam completes its definition as follows:—

(1) Nuoc-mam should contain 15 to 25 grammes of total nitrogen per litre.

(2) It should contain from 60 to 77 per cent. of total nitrogen in the form of nitrogen titratable to formol.

(3) Not more than 50 per cent. of the nitrogen titratable to formol is to be capable of being transformed into ammoniacal nitrogen.

(4) It must contain from 200 to 140 grammes of salt per litre.

The author concludes with a detailed account of the manufacture, chemical composition and methods of analysis of nuoc-mam.

A. D. B.

JANSEN (B. C. P.). **Researches after Nourishment, made in the Medical Laboratory at Weltevreden.**—*Meded. Dienst d. Volksgezondheid in Nederl.-Indië.* 1925. Pt. 2. pp. 132-135.

The author naively begins his remarks by stating that in feeding soldiers on organized rations good results are obtained because economy has not to be studied, while with prisoners bad results are obtained for the opposite reason. Research work was carried out in order that a dietary might be formulated which would keep the prisoners in good health and at the same time be reasonably cheap. For some years the diet had consisted of rice as its staple item, together with vegetables and fresh meat alternated, when possible, with fish. This was sufficient to keep the prisoners healthy, but it had its drawbacks, viz., the natives did not like the meat and the expense was considerable. Accordingly the meat ration was practically entirely replaced by Tempe Kedele*, a food much used by Javanese outside the prison. In order to guard against xerophthalmia, duck eggs and bananas were added occasionally. The percentage of protein in the new diet is lower than that in the old, though its biological value is the same or higher. The prisoners are contented and well and the saving in expenditure is great, which reminds one of the conventional ending to a fairy story.

A. D. B.

BLACKLOCK (D. B.). **Appendix XII.—Report on the Investigation, by Means of Experiment on Fowls, of Constituents of the Freetown Prison Diet.**—*Sierra Leone Ann. Med. & San. Rep. for the Year 1923.* pp. 87-88. With 38 figs.

An account of experiments upon fowls fed upon the constituents of the Freetown Prison diet is given. The work is a continuation of that published in the report for 1922.

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*Boiled soy beans fermented.—Ed.

"It was found that rice as supplied to the prison, whether old or new, if unpounded and cooked for short periods and if given with the water in which it had been cooked, did not produce signs of polyneuritis in fowls in the period of the experiment (three months) When the water in which the rice had been boiled was discarded there was evidence of definite effects on the fowls This effect was increased when prolonged cooking was carried out Even the brief pounding of the rice which was usually given at the prison for the purpose of cleaning the rice proved to have a greater individual effect than any of the other factors mentioned "

The effect of the age of the rice and of the presence of weevils were studied, but further experiments are necessary

Ground Nuts—On an exclusive diet of water and roast ground nuts fowls lost weight and died in too short a period for polyneuritis to show itself

Split Peas—Fowls fed exclusively on this constituent did not develop polyneuritis, nor did they die in the experimental period

During the investigation it was noted that prisoners working as tailors were particularly prone to beriberi Two possible factors were discussed in attempting to explain this curious phenomenon, viz, sunlight and exercise As regards the former, experiments on fowls revealed no difference between those kept in the dark and those in sunlight Exercise, however, was found to be particularly potent Of fowls fed upon experimental diet and kept at rest all died in 17 days, while of those allowed free movement none died in less than 31 days. A second experiment was instituted in which more freedom of movement was given to all the birds Of five fowls deprived of exercise none lived longer than 26 days, while a similar number fed in the same way and allowed free exercise survived 38 days or longer

"The observations and experiments made here on the influence of lack of exercise in the disease beriberi are, so far as I am aware, new, and if confirmed will prove of considerable importance in dealing with beriberi '

A D B

MAXWELL (J Preston) **On Food Deficiency Disease simulating Pregnancy Toxaemia.**—*Jl Obstet & Gynecol* 4 pp *Contributions from the Peking Union Medical College* 1924 Apr Vol 3 No 89 4 pp [3 refs]

In May 1922 a Chinese woman aged 20 was admitted to the Peking Union Medical College Hospital On examination she was found to be 33–34 weeks pregnant in addition to which she was oedematous and mentally confused It was decided after careful consideration that the case was not one of pregnancy toxaemia nor of cardiac failure A diagnosis of ' Disturbance of the calcium metabolism and incipient beriberi" was made This was based chiefly upon the facts that there had been much vomiting during the early period of pregnancy and that for the last 2–3 months the diet had been as follows —one meal a day of polished rice or whole wheat flour with a very small portion of vegetables and a little salted sesamum jam

The patient was promptly placed upon a diet containing cod liver oil, one teaspoonful t d s , milk-spinach soup (two tablespoonsful of pounded spinach to six ounces of milk) once a day , milk and eggs and "soft diet." As soon as the patient began to improve, which was in a short time, full diet was given in addition to milk and milk-spinach soup. On June 19th 1922 twin girls were born and five months later both the mother and the babies were thriving.

A. D. B.

HARDEN (Arthur) & ZILVA (Sylvester Solomon). **Investigation of Barley, Malt and Beer for Vitamins B and C.**—*Biochem. Jl.* 1924. Vol. 18. No. 5. pp. 1129–1132.

The results of this investigation can best be given in the authors' own words :—

" 1. The vitamin B of barley is not affected by the malting process and is frequently present in the finished malt, but is absent from the culms.

" 2. The antiscorbutic vitamin appears in the steeped grain and is present in the green malt but absent from kilned malt.

" 3. The beer examined by us was free from both vitamins B and C."

The beer referred to in this work is the variety known as India Pale Ale.

A. D. B.

PURDY (J. S.). **Vitamins and Fruit in Diet.**—*Jl. Roy. San. Inst* 1925. Feb. Vol. 45. No. 9. pp. 393–408.

A fascinating but discursive address.

A. D. B.

PLAGUE.

ELTON (C. S.). **Plague and the Regulation of Numbers in Wild Mammals.**—*Jl. of Hyg.* 1925. Oct. Vol. 24. No. 2. pp. 138–163. With 4 text figs. [62 refs.]

This long paper is a compilation which cannot be easily condensed. The references are numerous and useful; but as to the rodents and other animals mentioned there is little recorded that has not been noticed in previous volumes of this *Bulletin* [v. index (WU LIEN TEH, HAYDON, LEGER & BAURY, etc.); v. also *Sanitation Supplement,* 1925, Mar. 30, pp. 18–20 (WU LIEN TEH); and *Sanitation Supplement,* 1925, Oct. 30, pp. 188–189 (BUCHANAN)].

J. H. Tull Walsh.

GELONESI (G.). La seconda epidemia di peste verificatasi nella Regione dello Scidle (Somalia italiana). Osservazioni batteriologiche, cliniche e terapeutiche. [**Second Outbreak of Plague in the Italian Somaliland.**]—*Ann. di Med. Nav. e Colon.* 1925. Sept.–Oct. Year 31. Vol. 2. No. 3–4. pp. 159–178. [15 refs.]

The region to which this report refers suffered from plague in 1923–1924; see this *Bulletin,* Vol. 22, p. 373 (ANDRUZZI). The epidemic seemed to have subsided; but the disease reappeared later in 1924. The author of this report gives a full account of the second epidemic. As contrasted with a former report the use of anti-plague serum was not so successful in all cases. It is, however, worthy of notice that the statistics show 78 per cent. cures. Anti-plague serum gave very good results among patients previously protected by anti-plague vaccination.

J. H. T. W.

i. GREKOFF. Ak-Kamishskaya Vspishka Chumi v 1924 G. [**The Plague Outbreak at Ak-Kamish in 1924.**]—*Guigiena & Epidemiologia.* Moscov. 1924. July–Aug. Year 3. No. 4. pp. 43–52.

ii. A.B. Chumnaja Vspishka v Turkestane v Amu-Darinski Oblasti. Januar–Jun, 1924 G. [**The Plague Outbreak in the Amu-Darya District of Turkestan, January-June, 1924.**]—*Vjestnik Microbiologii & Epidemiologii.* Saratov. 1924. Vol. 3. No. 3. pp. 198–201.

These two papers deal with a plague epidemic occurring in two adjacent villages situated not far from Petro-Alexandrovsk (now called Turt-Kulja), on the Amu-Darya river in Russian Turkestan. A total of about 125 cases with 110 deaths occurred, most of them being bubonic in type. As these sparsely populated regions are devoid of medical personnel the authorities only heard of the outbreak late in April. Only two-thirds of the patients were medically observed. Out of 83 cases 74 had uncomplicated buboes, six had secondary pneumonia, two showed primary lung symptoms. Of 16 patients treated in the hospital 31 per cent. recovered, whereas only 14 per cent. of the 67 others got well. One case with secondary pneumonia treated with glycerinated vaccine also escaped.

A serious and widespread epizootic had raged among the wild rodents in this district in autumn, 1923, so that towards the end of the human outbreak practically no rodents could be found There is reason to assume that the first human cases already occurred in autumn, 1923, having contracted infection while harvesting millet. After the epidemic was over, NIKANOROFF succeeded in proving plague infection in two wild rodents (" white sand mice ") Grekoff emphasizes the absence of any human outbreak for at least 50 years in this particular region of Turkestan He is, however, unable to state definitely how the wild rodents became infected *

Wu Lien Teh & R P

SUKNEFF (V V) Dva sluchai legochnoi chumi v Chitinskoi bakteriol laboratorii [**Two Cases of Pneumonic Plague in the Chita Laboratory.**]—*Guigiena & Epidemiologia* Moscov 1924 July–Aug Year 3 No 4 pp 53–59

This paper gives a detailed account of a laboratory outbreak occuring in the well-equipped Chita Antiplague Laboratory in December, 1923 The first victim, a lady doctor although prohibited from touching living plague bacilli, disobeyed this order during the temporary absence of her chief While preparing anti-plague vaccine she spilled some of the emulsion on her gown This occurred on December 8th She fell ill on the 13th bloody sputum appeared on the 15th and she died on the evening of the same day Only a partial post-mortem could be performed, the faucial [?thoracic] organs were not seen (so that the primary character of the lung changes is not absolutely ascertained). Bacteriologically, the diagnosis was fully established One of the contacts of the doctor—a laboratory assistant—who had been in close association with her early on the 15th, fell sick on the 18th December He developed pneumonic symptoms and died on the 20th

Wu Lien Teh & R P

GIRARD (G) Le depistage " post-mortem de la peste a Madagascar Ponction pulmonaire et ponction hepatique [**Detection of Plague in Madagascar after Death : Lung and Liver Puncture.**]—*Bull Soc Path Exot* 1925 Oct 14 Vol 18 No 8 pp. 603–617 [5 refs]

After much detailed description of methods and results the author concludes that for post-mortem detection of plague puncture of the liver is a valuable method especially in bubonic and septicaemic plague It may fail in certain forms of pneumonic plague only to be detected by puncture of the lung, which gives smears full of characteristic germs This method can only be usefully employed in important centres where a bureau of hygiene with laboratory and specialists exists The punctures must be made before the bacteria of putrefaction invade the body " In the discussion which followed the reading of this paper M Marcel LEGER, after congratulating M Girard on the work he had done, said " Post-mortem diagnosis was extremely rare at Dakar [Senegal] when I was there Co-ordination between the municipal medical officers and the Service of Hygiene led to early diagnosis of plague and transference of patients to hospital Of those who died before a diagnosis was made I received many smears from the buboes and other organs. I believe that in the cases of pneumonic plague *B. pestis* was found in the liver as in the lungs."

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* Dr WU LIEN TEH has kindly offered to furnish suitable summaries by himself and colleagues from Russian sources We have here the first to be published

J. H. T. W.

LE COUSSE (E.). Recherches sur la peste au Cambodge en 1924, poursuivies au Laboratoire de Pnôm-Pênh. [**Work on Plague at the Pnôm-Pênh Laboratory, Cambodia, in 1924.**]—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 630–632.

This is a paper on post-mortem detection of plague in the laboratory. In 1,065 examinations of organs sent to the author plague was verified in 103 cases. The author very wisely states that in early and doubtful cases he felt obliged to give a serious warning to the Service of Hygiene. For this reason he admits the figure—103—may be too high. His conclusions concerning plague among infants are worthy of record :—
"Plague among infants from birth to two years of age was only confirmed in nine cases, and for the greater part of these control cultures and inoculations did not give confirmative results."

"Plague among infants did not appear to be a frequent cause of mortality."

J. H. T. W.

KIRK (J. Balfour) **Note on a Case of Bubonic Plague displaying a Generalised Eruption.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Mar. 19 & May 21. Vol. 19. Nos. 1 & 2. pp. 84–86. With 1 chart in text & 2 figs. on 1 plate. [1 ref.]

The author of this Note is Medical Officer of Health, Port Louis, Mauritius. The facts briefly are as follows :—

On October 1st, 1924, a Hindu child was admitted to the Plague Lazaret, Port Louis, suffering from bubonic plague. There was a right inguinal bubo about the size of a pigeon's egg, it was tender ; no sign of liquefaction, skin hot and dry and patient drowsy and very irritable when roused. On admission an attempt was made to inject anti-plague serum, but the girl was so restless that only 5·0 cc. could be given. 1·0 cc. of "Clinsearch" anti-plague vaccine was injected subcutaneously in the right upper arm on October 2nd. On October 6th a small bubo developed in the left axilla. On October 8th papules seen previously on the face became vesicular ; papules appeared on the neck. Papules appeared on the arms on October 10th, and on the buttocks and thighs on the 11th. Many of the vesicles became pustules. The skin between the various elements composing the rash was apparently healthy, except over the joints, where it was oedematous. There was no itching with the eruption. A temperature chart is given and the two photographs show the eruption on face and legs ; also oedema round the right knee joint. Dr. L. G. BARBEAU, Director of the Bacteriological Laboratory examined material from the pustules. The slides from agar slants showed gram-negative organisms, many exhibiting bi-polar staining with thionine blue. Subculturing on broth and sugar media yielded stalactite growths and biochemical reactions of *B. pestis* [*v.* this *Bulletin*, Vol. 22, p. 773]. (TEISSIER *et al.*) The child died on October 17th. No post-mortem and no animal experiments.

J. H. T. W.

Roberto Paso (Juan). Peste a forma ganglionar común grave con septicemia y carbunclos pestosos primarios y secundarios. [**Grave Bubonic Plague with Septicaemia and Carbuncles both Primary and Secondary.**]—*Semana Méd.* 1925. Aug. 6. Vol. 32. No. 32 (1647). pp. 277–287. With 9 text figs. & 1 chart.

The author describes, with much detail, a serious and fatal case of bubonic plague complicated by septicaemia and carbuncles on the chest and back. Admitted to hospital November, 1922, B.M., aged 26, died after four days. The temperature varied between 38° and 40° C. A full account is given of the bacteriological examinations : *B. pestis* was found together with staphylococci and streptococci. The findings at the autopsy are described, and the figures show various aspects of the carbuncles. A ground plan of Temperley, the district in which the man lived, is given, and the author states that in previous years two other fatal cases of bubonic plague had occurred ; but the source of infection was not clearly established.

J. H. T. W.

Roberto Paso (Juan). Meningitis pestosa. [**Plague Meningitis.**]—*Semana Médica.* 1925. Nov. 5. Vol. 32. No. 45 (1660). pp. 1139–1151. With 3 text figs. [15 refs.]

The author describes at great length and with much detail a case of plague with cerebrospinal meningitis. The patient, a male Spaniard, aged 39, when seen, showed inguinal buboes, submaxillary buboes and septicaemia ; later, signs of cerebrospinal meningitis appeared. The man died on the 15th day. The case was treated with injections of anti-plague serum—small doses : 80 to 120 cc. *B. pestis* was found in the buboes and by blood culture.

J. H. T. W.

d'Herelle (F.). Essai de traitement de la peste bubonique par le bactériophage. [**Treatment of Bubonic Plague by Bacteriophage.**] —*Presse Méd.* 1925. Oct. 21. Vol. 33. No. 84. pp. 1393–1394. With 4 text figs. [1 ref.]

Recently three cases of plague occurred on a steamer in the port of Alexandria. The patients were taken to the isolation hospital. A few days later a fourth case was sent in from another steamer. In each of the four cases injection of "bacteriophage," with puncture of the buboes, was the only treatment employed. The cases are described in detail. In all four cases cicatrization and absorption took place more or less rapidly after treatment. The "bacteriophage" used was prepared as follows :—10 cc. of culture of *B. pestis* in broth for 24 hours (pH—7·6 ; temperature 32° C.) were added to 3 cc. of fresh bouillon and inoculated with a previous culture bacteriophage of great bactericidal virulence. This bacteriophage was isolated in Indo-China from the stools of rats during a plague epidemic. After incubation for 24 hours at 37° C. the clear filtered liquid was used for the injections. Doses of 0·5 cc. and 1·0 c.c. of the bacteriophage fluid were injected into the buboes and the temperature charts show a steady fall of temperature after the injections. In two cases the buboes were also freely incised. The author states that in septicaemic and pneumonic plague intravenous injection might be tried. [*v.* this *Bulletin,* Vol. 21, p. 70 (Villazon and other references).]

J. H. T. W.

JETTMAR (H. M.). **Remarks on the Coexistence of Tuberculosis and Plague. (Studied on Mixed Infection in Guinea Pigs.)**—*Nat. Med. Jl. China.* 1925. Aug. Vol. 11. No. 4. pp. 257–281. With 3 text figs. [15 refs.]

Clinical evidence does not support the view that pre-existent disease is any protection against plague infection. The writer puts the matter to the test in experimental animals by demonstrating the possibility of coexistence of tubercular and plague lesions in various situations and in various organs. There is no evidence, he finds, that the proximity of one organism exerts a detrimental effect on the other. Plague bacilli, however, do not migrate deeply into the tubercular granulation tissue of a tuberculous ulcer, nor are they to be found in caseous tubercular tissue. But there may be fusion of the necroses due to the plague and tubercle bacilli respectively. Tests carried out *in vitro* give similar findings to the *in vivo* experiments. Thus plague bacilli remain alive with undiminished virulence when inoculated into a tubercular surface growth on glycerin bouillon and again tubercle bacilli grow freely when sown in bouillon that has already served as culture medium for the plague bacillus.

W. F. Harvey.

MALONE (R. H.), AVARI (C. R.) & NAIDU (B. P. B.). **The Bactericidal Power of the Blood of Rats as a Measure of their Immunity to Plague.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. pp. 121–129. With 2 charts. [9 refs.]

Using the technique of HEIST and SOLIS-COHEN (*Jl. Immunology*, 1918, Vol. 3, p. 233) a definite correlation has been shown to exist between the bactericidal power of the blood of rats and their immunity to plague. As a definite relation exists in rats it may be possible by this, or some other, technique to measure directly on man the protection likely to be afforded by various kinds of plague vaccines, the proper dosage to be employed, the duration of immunity and the effect of re-inoculation, as well as to throw some light on the mechanism of natural and acquired immunity to plague.

J. H. T. W.

WAYSON (N. E.). **A Disease in Wild Rats with Gross Pathology resembling Plague.**—*Public Health Rep.* 1925. Sept. 18. Vol. 40. No. 38. pp. 1975–1979.

There has been observed among the wild rats of Oakland, California, and the neighbouring cities a disease the gross pathology of which resembles plague in rats. The specific factor is apparently one of the haemorrhagic septicaemia group, which produces rapid death in inoculated guineapigs, wild rats, and white rats, with resultant lesions resembling somewhat very acute plague. The practical importance of the disease is the difficulty it interposes in the routine diagnosis of plague in rats. The difficulty arises because of the similarity of plague lesions and those of this disease in the wild rat, and because the presence of the disease in a plague infected rat frequently results in the premature death of the inoculated test animal before the lesions of plague develop and before the plague organism has become widely disseminated through the tissues. The sanitary significance of these findings is as yet uncertain, since the pathogenicity of the haemorrhagic septicaemia group, other than *B. pestis*, with regard to man is unknown.

Dr. Karl F. Mayer and Mr. A. P. Batchelder are pursuing in more detail the study of the identification and classification of the organism involved.

J. H. T. W.

Lebedev (F. N.). *Citellus mugozaricus.* **I. Biological Observations.**
Nikanorov (S. M.). **II. The Rôle of** *Citellus* (*Spermophilus*) *mugozaricus* **as Carrier and Transmitter of Plague Infection to Man.**—*Rev. Microbiol. et Epidémiol.* 1925. Vol. 4. No. 3. English summary pp. 85–89. [In Russian pp. 25–34.] With 4 text figs.

Professor Nikanorov initiated the study of spermophiles on the left side of the Volga, the research being confined to the Volga German Republic. There were discovered 51·3 per cent. slanting burrows and 48·0 per cent. straight ones. The nests were at a depth of 97·0 cm. (see figs. 1–4). In May and June young spermophiles come out from the burrows to the surface of the ground. They feed on roots and grass; but in the laboratory they eat bread, potatoes, milk, etc. The study of spontaneous plague epizoötics among spermophiles (1912–1924) has shown that they are at the worst in May and June and on the wane as winter comes on. The form of disease is, in most cases, bubonic with lung and intestinal complications. Out of 198 infected animals under observation 193 perished, 5 recovered. Cultures of the plague bacillus are easily isolated from dead animals. Regular prophylactic anti-plague inoculation should be carried out in such areas.

J. H. T. W.

Maruyama (Y.). Ueber die Beziehungen zwischen den Veränderungen des Leukozytenbildes bei mit Pestbazillen geimpften Kaninchen und der Antikorperbildung. [**Relation between the Changes in the Leucocyte Picture in Rabbits inoculated with Plague Bacilli and the Formation of Antibodies.**]—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. of Formosa*). 1925. June. No. 243. German summary p. 4. [In Japanese.]

This paper refers to the relation between leucocytosis and the formation of antibody in rabbits inoculated with plague bacilli. The author admits that it is difficult to produce a distinct leucocytosis by such inoculations unless they are large—more than 1 mgm. Between the experimental leucocytosis and the bacteriotropic substance and antibody there is no marked relation.

J. H. T. W.

Pons (R.). Action du bacille de Yersin sur les principaux hydrocarbones. [**Action of Plague Bacillus on the Chief Sugars.**]—*Ann. Inst. Pasteur.* 1925. Nov. Vol. 39. No. 11. pp. 884–887.

The author describes experiments made at Saigon on the reactions produced with various carbohydrates by the bacillus of plague and gives a table showing the action of 16 strains on five sugars at their isolation and after 6 and 12 months. He concludes that the plague bacillus never ferments lactose and saccharose, and always ferments maltose and glucose, and usually marmite, but without gas production; it is distinguished from other species of Pasteurella by the absence of fermentative action on saccharose.

J. H. T. W.

SCHÜTZE (Harry). **Plague Immunization in Guinea-Pigs and Rats.**—*Brit. Jl. Experim. Path.* 1925. Oct. Vol. 6. No. 5. pp. 207–210. [5 refs.]

In this paper the writer gives experiments which show differences in the immunizing power of various types of plague vaccine, when used on guineapigs. The same vaccines exhibited no difference of potency when used on rats. The three vaccines used were Haffkine's broth, heat-killed agar-grown, and a modification of Rowland's phenol-killed agar-serum vaccine as prepared at the Lister Institute. Of these, the last was the most efficacious. The writer comes to no conclusion on the reason for the difference found between guineapigs and rats in the matter of potency of the vaccines used, but suggests that it may have been "due to the infecting doses having been too weak for severe and differentiating tests or because rats respond to plague vaccines in a different manner from guineapigs"; he cannot say to which of these animals man would correspond. For guineapigs the immunizing doses were 1,500 million and 3,000 million at an interval of seven days and for rats half these amounts. The test doses in the case of the guineapigs were ⅛ or ¼ cc. of a 2-day broth culture and in rats 1/100 cc. of a 3-day culture.

The method of preparation of the Lister Institute vaccine is: (1) Grow a body strain of *B. pestis* in bouillon 3 days at 28° C. (2) Mix: Bouillon culture, 1; horse serum (inactivated 30 min. at 56° C.), 9. (3) Sow nutrient agar in Roux bottles with this mixture of bouillon culture in heated serum. (4) Incubate face upwards at 28° C. for 3 days. (5) Reflood the agar surface daily by tilting the bottles backwards and forwards. (6) Wash off the growth after incubation with 0·75 per cent. phenol-salt solution. (7) Enumerate bacteria in the suspension obtained. (8) Leave at room temperature till sterile. (9) Dilute to the strength of 3 million per cc. with 0·5 per cent. phenol-salt solution.

In the experiments the vaccines used were all made from the same strain of *B. pestis*. A typical experiment with guineapigs, in which the order of use of vaccines was Lister, agar-grown heat-killed, and Haffkine, gave a protection for 16, 18 and 21 animals respectively of 44, 22 and 14 per cent. A similarly arranged experiment with rats gave a protection for 20, 20 and 19 animals respectively of 91, 90, and 86 per cent.

W. F. Harvey.

VON JETTMAR (H. M.). I. Einige Bemerkungen zur Epidemiologie und Histologie der Lungenpest. [**Epidemiology and Histology of Pneumonic Plague.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Nov. 6. Vol. 29. No. 11. pp. 650–665. [24 refs.]

This paper refers to pneumonic plague in Manchuria and neighbouring areas in China. Many of the most important papers referred to have already received notice in this *Bulletin*, see Index for FUJINAMI, WU LIEN TEH, KULESCHA, TSURUMI, and others.

J. H. T. W.

TSURUMI (M.). **Investigation of Pneumonic Plague prevalent in Manchuria in 1920-21.**—*Jl. Roy. San. Inst.* 1925. Dec. Vol. 46. No. 7. pp. 291–298.

An interesting and well-written paper which, however, contains nothing new [*v.* this *Bulletin*, Vol. 22, pp. 775–776 (WU LIEN TEH & POLLITZER), Vol. 22, pp. 374–375 (various authors (TSURUMI, etc.), and references)].

J. H. T. W.

VAN STEENIS (P. B.). **The Way in which Plague spreads over Java.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 4. pp. 446–457. [5 refs.]

Polemical article against OTTEN (see this *Bulletin,* Vol. 21, p. 440), chiefly concerning the questions: (1) Whether "normal contact" exists between the house rat and the field rat in Java, in view of the part which the *Pygiopsylla ahala* (a parasite of the latter) might possibly play in the spread of plague; and (2) whether minor rice transport or, better, the field rat theory of VAN STEENIS could explain the extremely quick spread of plague round Parakan in 1919. The argument cannot be followed in detail.

W. J. Bais.

GRAHAM (J. D.). La peste dans l'Inde Britannique en 1924.—*Bull. Office Internat. d'Hyg. Publique.* 1925. July. Vol. 17. No. 7. pp. 753–755.

LLOYD (J.). Plague—Past, Present and Future.—*Jl. Amer. Med. Assoc.* 1925. Sept. 5. Vol. 85. No. 10. pp. 729–732. [5 refs.]

VAN LOGHEM (J. J.). Le rat domestique et la lutte contre la peste au XVIIe siècle.—*Rev. d'Hygiène.* 1925. June. Vol. 47. No. 7. pp. 521–527. [2 refs.]

MARTINELLI (Giuseppe). Contributo all' epidemiologia pestosa epidemia di peste bubbonica nella Somali Italiana nell' anno 1924. Relazione sulla campagna antipestosa svolta nel territorio della R. residenza di Audegle (Somalia Italiana).—*Pathologica.* 1925. Apr. 1. Vol. 17. No. 393. pp. 185–187.

NAZARETH (F. X. de Sequeira). Epidemiological Notes on a Plague Outbreak at Margão and Surroundings in 1923–1924.—*Bol Ger. Med e Farmacia.* Bastora. 1924. Oct. 9th Ser. No. 10. pp. 409–429.

RENAUD (H. P. J.). Sur une épidémie de peste pulmonaire autochtone (pneumonie pesteuse primitive) au Maroc Occidental.—*Bull. Soc Path. Exot.* 1924. Nov. 12. Vol. 17 No. 9. pp. 791–798. [10 refs]

RODENHUIS (Y.). Pest.—Reprinted from *Handbuch der inneren medizin.* 2te Auf. Vol. 1. pp. 1263–1284 With 9 text figs. 1925. Berlin: Verlag von Julius Springer.

SEYFARTH (Carly). Ueber die Pest in Griechenland auf Grund einer Studienreise im Herbst 1924.—*Muench. Med. Woch.* 1925. Aug. 21. Vol. 72. No. 34. pp. 1428–1431. With 5 text figs. [9 refs.]

WILLOUGHBY (W. M). Plague Measures in 1665 and Now.—*Jl. Roy. San Inst.* 1925. Dec. Vol. 46. No. 7. pp. 280–284.

WU LIEN TEH. The Original Home of Plague.—*Japan Med World.* Tokyo. 1924. Jan. 15. Vol. 4. No. 1. pp 1–8. With 1 map in text.

CHOLERA.

MAITRA (G. C.), GANGULI (Lal Behari) & BASU (J. B.). **Cellular Elements in Cholera Stools and their Relative Importance in Diagnosis of the Disease.**—*Indian Med. Gaz.* 1925. July. Vol. 60. No. 7. pp. 321–323. With 2 text figs. [2 refs.]

Cytological elements in the stool have furnished important clues in diagnosis. The toxins of the "comma" bacillus exert a specific action on the epithelial cells of the small intestine leading to necrosis and evacuation of the stools. A faithful picture of these changes is obtainable throughout the course of the disease and can be seen by staining a thin film of the stool made from a small bit of mucus. The cells are usually the altered epithelial cells of the small intestine with badly stained nuclei and very little protoplasm round them. Polynuclear cells are, as a rule, absent.

In 495 cholera cases diagnosed bacteriologically vibrios were found microscopically in 84 per cent. of the stool films. Of 496 cases 92 per cent. showed definite concentration of the blood. The cytological elements are constant and characteristic and a reliable index in 98 per cent. of cases.

J. H. Tull Walsh.

GHOSH-DASTIDAR (S. K.). **Treatment of Cholera and its Complications.**—*Jl. Trop. Med. & Hyg.* 1925. July 15. Vol. 28. No. 14. pp. 261–264.

There is nothing actually new in this paper; but, since reminders and repetitions are necessary, it is worth reading. The author writes that the treatment of cholera depends chiefly upon the stage of the affection and then describes the various stages. The indications for treatment are:—(1) To replace the lost fluid in the system; (2) To relieve the cramps; (3) To lessen the activities of the absorbed toxins; and (4) To lessen the number of vibrios in the intestine. The composition of saline injections is given: *Hypertonic, Isotonic* and *Hypotonic* which contains bicarbonate of soda and is used to counteract acidosis and uraemia. Kaolin and other drugs are mentioned as useful in the early stages or in mild cases. Directions for diet and hygienic measures are recorded and Haffkine's anti-cholera vaccine for use as prophylactic treatment.

J. H. T. W.

GANGULY (Lalbehary). **Izal in Cholera.**—*Indian Med. Gaz.* 1925. Oct. Vol. 60. No. 10. p. 467. [1 ref.]

Having given izal a fair trial as treatment in the cholera ward of the Campbell Hospital, Calcutta, the author concludes that:—

> "In the treatment of cholera, izal cannot be put on a higher level than any other drug so far tried."

He believes that success in severe cases lies in judicious use of salines and alkalies.

J. H. T. W.

Harris (Norman MacL.). **The Preparation of Endo's Medium.**—*Milit. Surgeon.* 1925. Sept. Vol. 57. No. 3. pp. 280–285. [8 refs.]

When Endo published, in 1904, the formula of the medium which bears his name, a great advance was made in the technique for the differentiation of the main members of the colon-typhoid group of bacteria. As the result of laboratory work on this medium and its possible modifications the author has found that the following formula gives the most consistent results :—

K_2HPO_4	3·5
"Difco" peptone	10·0
Agar (washed and dried)	15·0
Water (distilled)	1,000·0
Lactose, c.p.	10·0
To every 100 cc of the above :—	
Sodium sulphite (anhydrous)	0·25
Basic fuchsin (pararosanilin and rosanilin), filtered 10 per cent. alcoholic solution	3·5 cc.

In conclusion he recommends the following factors :—

1. As a basis, Levine's formula, which does away with one of the root troubles, namely, meat extract.
2. A basic fuchsin containing both rosaniline and pararosaniline; other fuchsins are productive of irregular results.
3. A hydrogen-ion concentration within the limits of pH 7·4 to 7·6.
4. Any peptone that will give with Levine's formula a vigorous growth; "Difco", however, is highly recommended.

J. H. T. W.

Nobechi (Keizo). **Contributions to the Knowledge of** *Vibrio cholerae.* **1. Fermentation of Carbohydrates and Polyatomic Alcohols by** *Vibrio cholerae.*—*Jl. of Bacteriol.* 1925. May. Vol. 10. No. 3. pp. 197–215. [27 refs.]

This long paper contains detailed laboratory work some of which has been previously published by the author [*v.* this *Bulletin*, Vol. 22, p. 386]. Some of the conclusions are :—The selective media for *V. cholerae* based upon the decomposition of sucrose and amylum, devised by Bendick, Aronson and Kodama, have no capacity to discriminate the *V. cholerae* from the non-cholera spirilla. *V. cholerae* as well as most of the non-choleraic vibrio strains uniformly ferment the carbohydrates and polyatomic alcohols: glucose. laevulose, galactose, dextrin, amylum and mannitol. They entirely fail to ferment the following :—arabinose, xylose, inulin, dulcitol and iso-dulcitol (rhamnose) and salicin. Various strains decompose, in different degrees, lactose and glycerol.

J. H. T. W.

Bengston (Ida A.). **The Adaptability of Various American Peptones for Use in Cholera Media.**—*U.S. Public Health Service. Treasury Dept. Hyg. Laboratory—Bull. No. 139.* 1924. Nov. pp. 37–56. With 4 charts. [2 refs.]

The work here reported was undertaken for the purpose of ascertaining whether the various American peptones can be used as effectively as Witte's peptone, called for in Goldberger's formulae for cholera media. Opportunity was also afforded to study, in terms of pH ion concentration, the reaction most favourable for the development of *V. cholerae.* In conclusion it may be stated that the American peptones, in general, are suitable for the isolation of *V. cholerae.* Good growth was obtained in all media with the exception of Fairchild's peptone and sometimes Parke, Davis & Co.'s peptone solution, which were found to be too acid. By adjustment to a more alkaline reaction these could be made more favourable. The general statement may be made that owing to the variation among different peptones it is advisable to adjust to a more nearly uniform reaction in the case of those which vary to any considerable degree from Witte's in reaction. This paper is mainly concerned with the two enrichment media which Goldberger recommends be used conjointly, and the alkaline egg agar plating medium adapted from a similar medium described earlier (*Jl. Infect. Dis.* 1912. Vol. 10. p. 134) by Krumwiede, Pratt and Grund. The Goldberger-Dunham enrichment solution is :—

Potassium nitrate	1 gm.
Sodium carbonate (crystallized)	2 ,,
Sodium chloride	100 ,,
Peptone (Witte)	100 ,,
Distilled H_2O	1,000 cc.

The method of preparing the alkaline egg peptone and the alkaline egg agar for plating are described in detail. By adjusting the reaction of the Dunham solution in the alkaline egg enrichment medium and the agar in the alkaline egg plating medium to a point slightly on the alkaline side of neutrality, about pH 7·2–7·4, before the addition of the egg mixtures suitable media are obtained.

J. H. T. W.

Henrici (Arthur T.). **A Statistical Study of the Form and Growth of the Cholera Vibrio.**—*Jl. Infect. Dis.* 1925. July. Vol. 37. No. 1. pp. 75–81. With 16 figs. on 3 plates. [6 refs.]

It is well known that the cells of the cholera vibrio are subject to pronounced variation in form, and this organism has, therefore, been a favourite one for the study of pleomorphism. The literature dealing with this is extensive. Plate 1 shows various forms of *V. cholerae* seen by other workers. Plate 2 shows forms observed by the author. The forms observed were grown on plain agar. It is probable, therefore, that many of the apparent morphological changes of this organism reported in the literature are but variations in the rate of growth on different media or of different strains in the same medium. By the technic presented the variations may be followed quantitatively.

J. H. T. W.

Gloukhoff, Sokolowa & Goremykina. [Nouvelles recherches sur les anticorps de 73 personnes vaccinées au moyen de comprimés cholériques et de la poudre de cacao.] [**New Researches on the Antibodies in 73 Persons vaccinated with Cholera Cultures and Cacao Powder.**]—*Hygiène et Epidémiologie.* Moscow. 1925. Jan.–Feb. Vol. 4. p. 63. [Summarized in *Bull. Inst. Pasteur.* 1925. June 30. Vol. 23. No. 12. p. 557.]

These investigations were undertaken to study the variations in the antibody following vaccination by ingestion of killed cholera culture to which powdered cacao was added. The authors state that the antibody formed after the first vaccine dose *per os* disappears after nine

months. A re-vaccination does not cause much change in the amount present in the serum. They conclude that vaccination *per os* results in a local immunity of the walls of the intestine, sufficient to prevent the penetration of vibrios into the body and to protect man from infection.

J. H. T. W.

FLU (P. C) Ueber Cholerabakteriophagen. [**Cholerabacteriophage.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 99–107. [6 refs.]

The idea developed in this paper is that strains resistant to bacteriophagy are, or may be, not only resistant, but also may, by their growth, especially in bouillon, bring about a steady diminution of potency of any bacteriophage which may be present there would naturally be failure to carry on bacteriophage in subpassage, if the resistant strains got the upper hand and brought about the disappearance or inactivity of the bacteriophage.

This idea of the author may further be set out as a number of propositions —

(1) A killed lysogenic strain in association with a young growing lyso-susceptible strain in bouillon culture often furnishes a potent bacteriophage

(2) Lysogenic strains cultured in bouillon often develop resistant strains, with lengthening of the incubation time

(3) Strains which are resistant to bacteriophage bring about, with their growth, disappearance of any bacteriophage present

On the strength of these findings Flu considers he has probably explained the failure of D'HERELLE to obtain subpassage of the cholera bacteriophage, and on the other hand, the success of MEISSNER in her experiments with peritoneal exudate of normal guineapigs He suggests that D'HERELLE's failure was due to too long incubation of bouillon cultures, by which resistant (bacteriophage-destroying) strains were developed and that the apparent recovery of bacteriophage by MEISSNER from the peritoneal cavity of guineapigs had nothing to do either with guineapigs or with the cholera-immune serum used, but was due to the presence of a specially lysogenic strain of cholera vibrio

The technique employed by Flu was as follows —

(1) Make a suspension of the surface growth of 4 slope agar cultures of each of the test strains in 3 cc bouillon (2) Mix this suspension with desiccated anhydrous di sod sulphate to give a solid mass (3) Grind up the mass finely in a mortar (4) Make a suspension of the powder obtained in 100 cc bouillon (5) Heat 60 min at 58° C, and add a portion to a sterile flask containing 100 cc bouillon (6) Sow the flask with a test strain of *V. cholerae* (7) Incubate 14 days (8) Remove a small quantity of fluid from the incubated flask and heat for 60 min at 58° C (9) Test 0 1 cc. of this heated fluid for bacteriophagy against suspensions of young 18-hr vibrios

Ten strains were examined, numbered 21, 22, 23, 24, 100, 101, 102, 103, 104 and 105 respectively The results were that potent bacteriophage was obtained in those cases in which the conjunction of strain No 101 and a test strain occurred Not all the test strains, however, were susceptible of lysis For example, test strain No 22, after being rubbed up with di-sod sulphate and killed, only gave any bacteriophage when grown along with No 101 strain, and even then against strains 21, 22, 23 and 100 only Again, killed strain No 101 gave bacteriophage when grown with each of the same series of test strains as No 22, and for a considerable number of the tested strains, but not when tested against itself This No 101 strain was not only resistant to lysis, but was also capable of inhibiting or weakening the bacteriophage, if developed or present, and of bringing about its early disappearance on subpassage

W. F. Harvey.

TSUNETSUGU (Hiroshiro). [**On the Influence of the Bile and Mucous for the Proliferation of Cholera Vibrios.**]—*Tokyo Iji-Shinshi* (*Tokyo Med News*). 1925 Apr No 2416 [Summarized in *Japan Med. World.* 1925 June 15 Vol 5 No. 6 p. 157]

The vibrios of cholera proliferate luxuriantly in a medium containing human, rabbit's or cattle bile, although less so than in peptone water These three kinds of bile have the same value The same efficacy was seen in heated and non-heated bile A medium containing 1 per cent. of mucus was inferior to peptone water; but if it contained 3 per cent mucus it was superior even to peptone water

J. H. T. W.

KABESHIMA (Tamezo). [**Studies on the Shanghai Strain of** *Vibrio Cholerae* **of 1925.**]—*Tokyo Iji-Shinshi* (*Tokyo Med News*) 1925. Sept. No 2439. [Summarized in *Japan Med World* 1925. Nov. 15 Vol 5 No 11. pp 320–321]

The author carried out immunological tests with the strains isolated from the cases in Nagasaki, Yokohama and Tokyo, in which places an epidemic broke out in 1925 He concluded that they all belonged to one strain of very strong virulence

J H T W

CANTACUZENE (J) Formation d'une race agglutino-résistante de vibrions au contact des tissus d un organisme immunisé contre ces vibrions —*C R. Soc Biol* 1925 May 29 Vol 92 No 18 pp 1461–1464

CHO SYU CHO On Vibrios in Water —*Taiwan Igakkai Zasshi* (*Jl Med Assoc. of Formosa*). 1925 Apr No 241 English summary p 4 [In Japanese]

FRY (A B) Cholera in Bengal Past and Present —*Indian Med Gaz* 1925 July Vol 60 No 7 pp. 301–307 With 3 maps and 2 charts in text.

IIMURA Aperçu historique sur les épidémies de choléra au Japon —*Bull. Office Internat d'Hyg Publique* 1925 July Vol 17. No 7. pp. 740–749

GOLOVANOFF. Contribution à l'étude de la protection anticholérique par des agents non spécifiques —*C R Soc Biol* 1925 June 5 Vol 921. No 19 pp 1489–1490 [3 refs]

GRAHAM (J. D) Le cholera dans l'Inde Britannique en 1924 —*Bull Office Internat d'Hyg Publique* 1925 July Vol 17 No 7 pp 750–752

VAN LOGHEM (J J). Exohämolysine und Endohämolysine bei Vibrio Tor und *Vibrio cholerae* —*Beihefte z Arch f Schiffs- u Trop - Hyg* 1925 Vol 29. No 1 pp 207–210 [5 refs]

MAITRA (G C) & BASU (J B) Cultivation of Cholera Vibrio from Faeces —*Calcutta Med Jl* 1924 Nov Vol 19 No 5 pp 179–180 [2 refs] [*v* this *Bulletin*, Vol 21, p 887 (MAITRA & BASU)]

RUSSELL (A J. H) Periodicity of Cholera in India [Correspondence]—*Lancet.* 1925 Aug 15 pp 356–357

—— A Statistical Approach to the Epidemiology of Cholera in Madras Presidency —*Proc Nat Acad Sci.* Wash 1925 Oct Vol 11 No 10. pp 653-657 With 6 figs

SDRODOWSKI (P) & BRENN (E) Zur Pathogenese der Cholera —*Cent f Bakt.* I Abt Orig 1925 Feb 18 Vol 94 No 3-4 pp 155–160

ENTERIC FEVERS IN THE TROPICS

Bras de Sá (L J) Estudos sobre as febres remitentes de Goa. [**The Remittent Fevers of Goa.**]—*Bol Ger Med e Farmacia.* 1925 Jan 10th Ser No 1 pp 4–21

This paper is designed to show the value of what may be called the residual agglutinin test for diagnosing the character of a past febrile attack The author estimates the agglutinating titre to *B typhosus*, *B paratyphosus* A, and *B paratyphosus* B, of the sera of uninoculated patients who have at various intervals previously passed through an attack of fever, and if the results are positive with as high a dilution as 1 50 he regards this as diagnostic of one of the group and if the reaction is higher for one than for the rest as diagnostic of infection by that bacillus For example, a patient had an attack of fever of 15 days' duration two years previously His serum gave the following —

Dilution	*B typhosus*	*B paratyphosus* A	*B paratyphosus* B
1 10	+		
1 50	−	−	±
1 100	±	±	—
1 200	−	—	—

He concludes that the disease was probably true typhoid fever [This opens up the question how far agglutinins represent immunity reactions, while the reverse finding —that failure to agglutinate disproves infection by a member of the enteric group which appears also to be claimed in this paper is certainly not the case since the Widal reaction may be negative within a few months after a severe attack of enteric fever]

H Harold Scott

Minett (E P) **Enteric Fever in Chinese Infants.**—*Trans Roy Soc Trop Med & Hyg* 1924 Nov 20 & Dec 11 Vol 18 Nos 5 & 6 pp 276–277

As the result of observation and inquiry the author believes that enteric fever is much more common amongst Chinese infants than is usually supposed, especially during the local epidemics that occur occasionally, usually shortly after the beginning of the rainy season The Chinese do not drink unboiled water but as the native portion of the town (Hong Kong) is supplied with the bucket system of sewage disposal, and flies are abundant, the possibility of food contamination cannot be neglected "

J H Tull Walsh

Lichtenstein (A) Foudroyant verloopende Febris typhoidea [**Peracute Typhoid Fever.**]—*Geneesk Tijdschr v Nederl -Indie* 1925 Vol 65 No 3 pp 381–395 With 2 charts in text

Peracute cases of typhoid fever are rare They are mentioned in French text books and Rogers quotes two fatal cases of less than 15 days duration Lichtenstein describes three cases, ending fatally respectively after 2, 6, and 5 days In all the diagnosis was established by bacteriological examination post mortem, once after 20 hours (in the third case during life a blood culture in bile had been negative twice); there existed some follicular swelling with a few ulcers of the lower ileum and swelling of the mesenteric glands.

At the post-mortem of another acutely fatal case, showing the anatomopathological characteristics of typhoid fever (typical ulcers) it was found impossible to isolate the bacillus typhosus.

The knowledge of the existence of such cases of typhoid fever is important for the practitioner in the tropics.

W. J. Bais.

OOSTINGH (R). Eenige mededeelingen over de typhuspatienten van de Centrale Burgerlijke Ziekeninrichting te Weltevreden gedurende 1924. [**The Typhoid Patients at the Central Civil Hospital at Weltevreden during 1924.**]—*Geneesk Tijdschr. v. Nederl.-Indie.* 1925. Vol 65. No. 4. pp 525–528.

Among 151 patients the mortality was 21·2 per cent The highest mortality occurs during the first few days following admission, indicating that hospital attendance is only sought by the natives in comparatively late stages of the disease Of those attended to longer than three days the mortality was 18 per cent, of those longer than seven days 11·8 per cent In about 60 per cent of the cases the fever lasted less than 30 days Constipation was found in nearly 70 per cent, intestinal haemorrhage in 10·6 per cent (three ending fatally), perforation in two cases, both fatal

Further figures contained in the report are not of general interest

W J. Bais

LACY (G R) & GARCIA (O) **Results of Blood Cultures during the Recent Typhoid Investigation in Manila.**—*Jl Philippine Islands Med Assoc* 1925 Mar Vol 5 No 3 pp 83–85

The authors give full details of the number of persons examined and the methods employed in the investigation They obtained positive blood cultures from 30·7 per cent of all cases examined, or from 40·2 per cent of those proven to be typhoid or paratyphoid These results were obtained from patients who had been sick for an average of thirteen and one-tenth days Bile media proved to be more satisfactory than dextrose broth, they gave earlier positive results Nineteen paratyphoid "A" cultures were found among 120 positive cultures

J H T W

BOLETIM GERAL DE MEDICINA E FARMACIA 1924 Dec 9th Ser No 12 pp 492-512—Sôbre a endemia da febre tifoide na India Portuguesa [**Typhoid in Portuguese India.**]

A general inquiry into the prevalence of epidemics of enteric fever in Portuguese India, their causes and prevention Contains nothing new

J H T W

LALUNG-BONNAIRE (P) & PONS (R) Les fièvres typhoides en Cochinchine —*Arch Insts Pasteur d'Indochine* 1925 Oct No 2 pp 121–152 With 6 charts & 1 text fig [64 refs]

RABIES: A REVIEW OF RECENT ARTICLES. IV.*

During the last six months interest has centred chiefly upon the treatment of rabies by the ether method of ALIVISATOS. Results have appeared from various sources from which it appears that one may no longer rest content with a method of treatment which permits of failures in even a moderate degree.

We may be permitted, in the first place, to enquire into the origins of the method. At an early date in the history of anti rabic treatment, ROUX suspended brains containing fixed virus in a mixture of ether and water, and found that the brain substance retained its immunizing properties. He even commenced to treat patients by the use of this substance. This work was unpublished, but was passed on by word of mouth to REMLINGER, who refers to it in his first article on the use of ether (*Ann. Past. Inst.*, 1919. Vol. 23. p. 616).

Unaware of ROUX's experiments, REMLINGER, guided by the work of VINCENT on the attenuation of typhoid virus by ether, had investigated the properties of fixed virus brain substance which had been immersed in sulphuric ether. He found that the brain substance so treated for various periods of time and thereafter emulsified in normal saline, preserved its virulence after 60 hours immersion, but the superficial parts of the brain had become innocuous. After 120 hours immersion the whole brain had become avirulent. Of 37 rabbits, each of which had received from 1 to 7 gm. of original brain substance, eight were immunized.

In the meantime ALIVISATOS had been following a somewhat similar line of investigation in the antirabic institute at Nisch (Servia). He found similarly that 24–36 hours immersion in ether had little effect on virulence, that it was reduced by 48–96 hours immersion, and completely destroyed after 120–140 hours.

Large doses of this latter material were found to be innocuous, as also were large doses of street virus brains which had been similarly treated. Animal experiments gave indications of good immunizing properties, and so the method was applied to the treatment of man. Doses amounting to 4 gm. of original brain substance (F.V.) which had been extracted by ether for 72–108 hours, and thereafter emulsified in normal saline in the proportions 1 in 20, were employed. His results were as follows:—

	Persons treated.	Of whom there were severely bitten.	Deaths.	
			Less than 15 days after inoculation.	More than 15 days.
1. Högyes' method intensified ...	424	89	7	1
2. Högyes' method plus ether method. The latter at end of treatment, dose up to 4 gm. (72–108 hours in ether) ...	621	198	4	—
3. As in 2—but 8–10 gm. of brain substance (etherized 84–72 hours) given as early as possible	989	315	—	—

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* For the third of this series see Vol. 22, pp. 699–706.

He has never observed any paralytic accidents or other ill effects.

Alivisatos' method of preparation and treatment may be described in detail.

The fixed virus brain is freed from its membranes, weighed and immersed in sulphuric ether under sterile conditions. In this it remains for from 72–84 hours. It is then chopped up on a sterile plate, and left for an hour under a bell jar, to allow the ether to evaporate. It is then pounded in a mortar, and made up to 1 in 20 in normal saline. Inoculations of 1 to 1·5 gm. cause no inconvenience to the patient. The following is an example of the method of treatment. The case was that of a person bitten on the lip, who arrived 6 days late.

1st day	1·5 gm., etherized	84 hours.
2nd day	1·5	84
5th day	1·5	72
7th day	1·	72
9th day	1·	72
12th day	1·	72
14th day	0·5	72
15th day	0·5	72

In his paper (*Deut. Med. Woch.*, 1922, Vol. 48, p. 295), Alivisatos claims that cases of short incubation can be overtaken if large doses are given early in the treatment, and if they are of sufficient size.

It would appear then that the deleterious substance which leads to paralytic accidents, and thus precludes the exhibition of large doses of vaccine by the usual methods is ether-soluble, and can be removed by a very simple technical process. In previous reviews we have dealt in detail with the direct relation between risk of paralytic accident and quantity of nerve substance inoculated. In a current article Hempt states that the chances of such occurrences are as follows: With Högyes' method, 1 in 60,000, with the classic Pasteurian method 1 in 5,000, with intensive Pasteurian 1 in 2,000, with the "Roman method" 1 in 800, with the "German method" 1 in 400, and with superintensive methods even 1 in 30. We recall Schweinburg's experiments which showed that large quantities of normal brain substances also produced accidents. It would appear then that this primary difficulty has been removed, and that after removal of the deleterious substance—whatever be its nature—by etherization, we may use as large doses as we please. It is significant that the necessity for such a modification has arisen in places where bites are severe, and face bites are in undue proportion.

Let us now turn to a scrutiny of such statistics as have been collected.

Tables II. and III. showing the figures for the Vienna Institute are given by Schweinburg[1].

During the period 1919–21 various modifications of the dried cord method were employed. The treatment was lengthened up to 4 weeks. In certain cases the whole treatment was repeated after the lapse of a month. Doses were increased; stronger (less dried) cords were used. It will be remembered (this *Bulletin*, Vol. 22, p. 699) that no less than 39 paralytic accidents occurred at this Institute during a period of nine years.

During the last period, 1922–23, the method of Alivisatos was combined with those of Pasteur and Högyes in all severe cases, but

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[1] Schweinburg (Fritz). Bericht ueber die Tätigkeit der staatlichen Schutzimpfungsanstalt gegen Wut in Wien in den Jahren 1913–1923. (Vorstand Dozent Dr. Busson.)—*Seuchenbekämpfung.* Vienna. 1925. Vol. 2. No. 5. pp. 223–234.

TABLES II. and III.

	Pre-war, 1913–14.					War, 1915–18.				
		Deaths.		Failures.			Deaths.		Failures.	
	Treated.	No.	Per cent.	No.	Per cent.	Treated.	No.	Per. cent.	No.	Per cent.
Head ...	88	8	9·09	3	3·41	309	23	7·45	16	5·18
Hand ...	669	6	0·89	5	0·75	2,224	22	0·99	17	0·76
Upper Extremity	185	1	0·54	1	0·54	675	9	1·33	9	1·33
Lower Extremity	379	1	0·26	1	0·26	1,484	7	0·47	6	0·40
Trunk ...	47	—	—	—	—	158	—	—	—	—
	1,368	16	1·78	10	0·73	4,850	61	1·26	48	0·99

	Post-war, 1919–21					1922–23				
		Deaths.		Failures.			Deaths.		Failures	
	Treated	No.	Per cent	No	Per cent	Treated	No.	Per cent.	No	Per cent
Head ...	77	9	11·69	2	2·59	94	1	1·06	1	1·06
Hand ...	589	4	0·68	4	0·68	783	1	0·13	1	0·13
Upper Extremity	117	—	—	—	—	162	—	—	—	—
Lower Extremity	305	1	0·32	1	0·32	502	1	0·20	1	0·20
Trunk ...	29	—	—	—	—	22	—	—	—	—
	1,119	14	1·25	7	0·62	1,563	3	0·19	3	0·19

it is to be noted that of the three fatal cases included in the statistics one received no ether vaccine, and a second only half the quantity which was given latterly. The Pasteur method was finally abandoned in September, 1923, and since then no paralytic accidents have occurred.

For the results of treatment at the Vienna Institute during 1924 we turn to BUSSON[2], who states that among 672 treated, of which 42 were bitten on the head and more than double that number on the arm, no deaths have occurred.

Further results of treatment by ether virus come from HEMPT[3] from the institute at Novisad (Yugoslavia). Amongst 6,000 persons bitten during a period of three years, there have occurred 2 deaths, and no failures. HEMPT uses Alivisatos' method and employs doses amounting to 2 gm. for slight cases, to 3 gm. for severe, and to 4 gm. for exceptionally severe bites.

HEMPT's method, as described by JOANNOVITCH[4], differs somewhat in detail from that of ALIVISATOS and REMLINGER. The vaccine is prepared in two strengths, and daily doses are given Antibodies are said to appear in the blood between the 14th and the 18th day At the date when this paper was written, HEMPT's figures were 6,653 persons treated, and 4 died of rabies, all before 15 days after the completion of treatment

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[2] BUSSON (B.). Zur Frage der Lyssa-Schutzimpfung durch die praktischen Aerzte und der prophylaktischen Impfung der Hunde.—*Wien. Klin. Woch.* 1925. July 9. Vol. 38. No. 28. pp. 789-792.

[3] HEMPT (Adolphe). Sur une méthode rapide de traitement antirabique.—*Ann. Inst. Pasteur.* 1925. July. Vol. 39. No. 7. pp. 632–640. [1 ref.]

[4] JOANNOVITCH (G.). L'emploi du vaccin atténué par l'éther pour le traitement antirabique de l'homme.—*Bull. Office Internat. d'Hyg. Publique.* 1925. June. Vol. 17. No. 6. pp. 618–622.

(2) *Other methods of immunization* —In his report on the Pasteur Institute at Paris, VIALA[5] describes in detail the method which is there employed The method is that of CALMETTE, and may be quoted at length

In each of a number of 50 cc pots are placed 25 cc of neutral glycerine of specific gravity 1 262 (30° Be), and sterilized at 120° C for 20 minutes After cooling, fragments of cord, previously dried in the ordinary manner over potash sticks, are immersed in the glycerine The fragments placed in any vessel must not have collectively a greater length than 5 cm These vessels are placed in an ice box at 4° C

Cords are extracted from the rabbit by Oshida s method, and moribund animals are placed on ice to prevent agonal contamination Cords must not be kept in glycerine for more than 20 days The scale of treatment is as follows —

Slight cases receive a 15 days treatment of 3 cc daily of cords which have been dried for the following periods, 5, 5, 4, 4, 3, 3, 4, 3, 2, 4, 3, 2, 3 3 2 Multiple bites receive a further three days' treatment of cords dried 4 3, 2 days Severe bites a still further group of 3 doses, viz , 3, 3, 2, and head bites four days more, 3, 3, 2 2 Thus, a head case remains under treatment for 25 days

In Paris during the year 1924, 764 persons were treated , of these, 2 died, one of which was a " failure "

HERRMANN[6] has carried out further experiments with his " Vaccine 58–60 " (a 1 per cent emulsion of fresh nervous material heated for 30 minutes at 58–60 C to which ½ per cent carbolic has been added) After 20 days' treatment experimental animals withstood two intracerebral inoculations with S V He has treated 683 persons with this vaccine, and has had no deaths from rabies, or paralytic accidents,

NIKOLAJEWA,[7] writing from Ufa (Russia), has, during the years 1918–19, used mixtures of carbolized vaccine (FERMI) and serum From a series of experiments on 12 animals he concludes that vaccination by carbolized vaccines is as good as by dried cord and two and a-half times as good as by the dilution method of Hogyes Using UMENO and DOI s method of treatment, SCHOENING[8] carried out a series of immunization experiments on dogs He found that when tested with two different strains of street virus protection was good (12 of 16 survived) , but when tested with a third strain only 6 out of 30 dogs lived All these strains of street virus were freshly prepared, and the fixed virus of which a single immunizing dose was given had its origin in Paris He concludes that there must be more than one strain of street virus in America, and that this must be taken into account in the single dose vaccination of dogs

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[5] VIALA (Jules) Les vaccinations antirabiques à l Institut Pasteur en 1924 —*Ann Inst Pasteur* 1925 June Vol 39 No 6 pp 559–563

[6] HERRMANN (Otto) Inaktivierte konservierte antirabische Vakzine ' 58–60 Vorläufige Mitteilung —*Cent f Bakt* 1 Abt Orig 1925 Sept 15 Vol 96 No 2 pp 131–136 [1 ref]

[7] NIKOLAJEWA (F) Antiwutimpfung mittels Karbolvakzine nach der Methode von Prof Fermi —*Cent f Bakt* 1 Abt Orig 1925 Aug 1 Vol 95 No 7-8 pp 423–428 [11 refs]

[8] SCHOENING (Harry W) Studies on the Single Injection Method of Vaccination as a Prophylactic against Rabies in Dogs —*Jl Agric Res* Washington 1925 Mar 1 Vol 30 No 5 pp 431–439 [3 refs]

In an unsigned article in *La Grèce Médicale*[9], two cases of double facial paralysis following antirabic treatment are reported.

(3) *Chemotherapy*—Following on the work of FRIEDBERGER and SACH (1908), who claimed that the incubation period of rabies was prolonged by the administration of atoxyl and thioglycocholic acid, and of MOON (1913), who stated that quinine had a definite influence, HARKINS[10] examined the effects of various substances He found that when fixed virus was suspended in 1 in 200 sulpharsphenamin or in 1 in 1,000 flumerin, no germicidal action was exerted within 30 minutes at 38° C The material was tested by intravenous injection into the rabbit The incubation period was not prolonged No preventive or curative effects were obtained from injections of Gentian violet, neoarsphenamin, sulpharsphenamin, potassium bismuth tartrate, ethyl-hydro-cuprein hydrochloride, quinine and urea chloride or mercurochrome (220 soluble) The experiments were carried out on from 2 to 4 animals for each preparation, with three controls for the entire series

(4) *Statistics* ROCHAIX[11] reports that 718 persons were treated at the Lyons Institute during 1923 with no deaths, and from the Pasteur Institute of Southern India CORNWALL[12] reports a death rate of 1 43 and a failure rate of 1 22 amongst 489 persons treated Treatment is distributed to local centres from this Institute, and is by carbolized vaccine During the same year vaccine was dispatched for the treatment of 4 402 persons, of whom 28 contracted rabies (a rate of 0 64 per cent), 21 being failures, or 0 47 per cent

Reference has already been made to the statistics of SCHWEINBURG (Vienna), HEMPT (Novisad), and BUSSON

(5) *Prophylactic vaccination of dogs*—This question as it relates to the town of Milton (U S A) is discussed by WITHINGTON and BIGELOW[13] Four out of 239 dogs so treated died but investigation showed that these deaths were not due to the effect of the treatment A reduction in the prevalence of canine rabies had taken place but the authors are unable to say whether this is a result of the measures adopted

(6) *The Virus*—BABLET[14] discusses the virulence, and the resistance to desiccation and to attenuation by glycerine, of the virus in use in Saigon, which is in its 1,518th passage, and came originally

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[9] LA GRECE MEDICALE 1925 May–June Vol 27 No 5–6 p 20—Deux cas de paralysie faciale double consecutive au traitement antirabique

[10] HARKINS (Malcolm J) Chemotherapeutic Studies in Rabies—*Jl Amer Med Assoc* 1925 June 13 Vol 84 No 24 pp 1797–1798 [6 refs]

[11] ROCHAIX (A) Le traitement antirabique dans la region Lyonnaise en 1923—*Jl Physiol et Path Générale* 1925 Apr Year 24 Vol 23 No 2 pp 369–372 [1 ref]

[12] COONOOR, SOUTHERN INDIA The Pasteur Institute of Southern India, Coonoor The Annual Report of the Director together with the Eighteenth Annual Report of the Central Committee of the Association for the Year ending 28th February 1925 [CORNWALL (J W) Director]—27 pp 1925 Madras Printed by the Supt Govt Press

[13] WITHINGTON (Paul R) & BIGELOW (George H) The Milton Experience with Anti Rabies Inoculation of Dogs—*Boston Med & Surg Jl* 1925 Sept 17 pp 552–555 [5 refs]

[14] BABLET (J) Le virus rabique en Cochinchine—*Ann Inst Pasteur* 1925 Sept Vol 39 No 9 pp 783–787 [6 refs]

from Paris. This strain paralyses the rabbit on the 6th day, and kills on the 8th or 9th, and is thus considered to be of greater virulence than those of Paris, Dakar and Tangiers. It resists more than 40 days of desiccation. Ten days immersion in glycerine does not reduce the potency of 2 and 3 day dried cords, it attenuates those which have been dried for 4 and 5 days, and destroys the virulence of those similarly treated for 6 and 7 days. The street virus of Cochin China has, on an average, a 17-day incubation, and is not otherwise abnormal.

REMLINGER[15] emphasizes the advantages of keeping glycerinated cords at a low temperature in the ice chest.

An interesting observation had been made by GRJASNOV[16]. He finds that loss of virulence occurs less rapidly if oxygen is excluded. Cords which were submitted to slow drying (over caustic potash) in the absence of oxygen remained virulent after 17 days, whereas under the usual conditions they became avirulent in 4 days. Cords kept in a moist chamber also lost virulence in 4 days in the presence of oxygen. He considers that the protective action of glycerine depends solely upon its power of excluding oxygen.

(7) *Pathology.*—FRANÇA[17] has conducted an investigation into the nature of the disease in a number of animals belonging to various families. He finds an apparent difference in their susceptibilities to rabies among the rodents. The percentage death rates of different species were as follows:—*Mus decumanus* 90, *Mus musculus* 80, *Mus decumanus* (var. *albina*) nil, and *Mus musculus* (var. *albina*) 44 per cent. The death rate for *albina decumanus* was calculated from observations on 12 animals.

He found that the only pathological condition constant in all species was hypertrophy of neurofibrils. Perivascular infiltrations and nodules of Babes were observed in most—van Gehuchten's nodules were never found in rodents, or insectivora. No examination was made for Negri bodies.

(8) *Diagnosis.*—Two new methods of staining Negri bodies have been described. For the first, due to CAMPANACCI[18], are claimed the advantages of rapidity and ease. The detail is as follows:—

Fix cubes of 3 or 4 mm. in linear dimension in Schaudinn's fluid for about six hours: dehydrate in 95 per cent. and Abs. alc.: Xylol and Xylol paraffin in incubator: cut sections 5–6μ: Xylol: alcohol: Iodized alcohol to remove excess of mercury: wash in alcohol: then aq. dest Stain for 5 minutes in the following solution:—

Acid fuchsin (1 per cent. aequeous) .	10 drops.
Glacial acetic acid .	10 drops.
Aq. dest.	10 cc.

The sections are at this stage an intensive red colour. Wash rapidly in aq. dest.: place for 5 minutes in a freshly prepared solution of

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[15] REMLINGER (P.). A quelle température faut-il dessécher et conserver les moelles rabiques?—*C.R. Soc. Biol.* 1925. June 12. Vol. 93. No. 20. pp. 19–20. [3 refs.]

[16] GRJASNOV (N. I.). Influence d'air et de glycérine sur le virus fixe.—*Rev. Microbiol. et Epidémiol.* 1925. Vol. 4. No. 2. French summary p 116. [In Russian pp. 83–87.]

[17] FRANÇA (Carlos). Pathologie comparée de la rage. Recherches personnelles servant d'introduction à de futures investigations.—*Arch. Inst. Pasteur de Tunis.* 1925. July. Vol. 14. No. 3. pp. 309–324. [21 refs.]

[18] CAMPANACCI (D.). Un nuovo metodo pratico di colorazione dei corpi di Negri.—*Sperimentale.* 1925. Oct. 17. Vol. 79 No. 5. pp. 665–667. With 1 plate.

Glacial acetic acid (1 drop in 1 cc. aq. dest.): wash in distilled water: place for 15 minutes in Franckel's solution (saturated aequeous solution of picric acid 200 cc., Indigo-carmine 0·5 gm.). The section loses its red colour, and becomes a uniform green. Wash rapidly in aq. dest.: 95 per cent. alc.: Xylol: balsam. The bodies appear carmine on a yellow ground, and show very clearly the corpuscles of Volpino. Nucleoli are a pale rose, and are easily distinguishable from the bodies.

The second method is due to Turevich[19], and is as follows:—

The hippocampus is hardened in acetone for 1 to 2 hours, the acetone being changed at least once. Embed in paraffin, and cut sections not thicker than 3 to 4 μ. Attach sections to slide according to the method of Henneguy: remove paraffin and stain for 2 minutes in a freshly prepared solution of Weigert's iron haematoxylin: wash quickly in water, and place for 1 minute in a 1 per cent aequeous solution of acid fuchsin: wash thoroughly until colour begins to pale. Decolorize in a mixture of equal parts of saturated aqueous solution of picric acid and 95 per cent. alcohol. During this process clouds of colour are given off, and after 10–20 seconds the sections become yellow to transmitted light. Wash for a few seconds: dry with filter paper, and in air: abs. alc: oil of cloves: xylol: Canada balsam.

By this method the chromatin of the nuclei appears dark brown, the protoplasm of the cells is dark olive. Negri bodies are stained a cherry red, and show some internal structure. Erythrocytes are stained somewhat similarly (crimson).

Miscellaneous.—Herrmann[20] reports a death from rabies in a girl who was scratched by the claws of a hound. In another paper[21] he deals with the infectivity of the cerebrospinal fluid of persons suffering from rabies. This is found in some patients, but not in others, and hence is of little value diagnostically. In a third communication[22] Herrmann shows how intracerebral inoculation of rabbits may be performed without the aid of an assistant. In a fourth[23] he examines the duration of immunity, and decides that a second treatment is necessary for a person who has been bitten more than 3 months after the completion of treatment.

Schnurer's[24] and Busson's[25] papers in the *Wiener Klinische Wochenschrift* are of the nature of a personal controversy.

A. G. McKendrick.

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[19] Turevich (E. I) Novi Sposob Okraski Telez Negri pri Besheustre [A New Method of Staining Negri Bodies in Rabies.]—*Vjestnik Microbiologii & Epidemiologii* Saratov. 1925. Vol. 4 No 1 pp 71–72 [3 refs.]

[20] Herrmann (Otto) Tod an Lyssa nach dem Spielen mit einem Schoosshunde. —*Cent f. Bakt.* I. Abt. Orig. 1925. Aug. 1. Vol 95. No. 7-8 pp 428–429. [6 refs]

[21] Herrmann (Otto). Die Virulenz der Zerebrospinal-flüssigkeit beim wutkranken Menschen und die Vererbung der Wut —*Cent f. Bakt.* I Abt. Orig 1925. Aug 1 Vol 95 No. 7-8. pp. 429–431. With 1 text fig [5 refs.]

[22] Herrmann (Otto) Intrazerebrale oder subdurale Infektion der Kaninchen ohne Assistenten.—*Cent. f. Bakt.* I. Abt. Orig 1925. Aug. 1. Vol. 95. No. 7-8. pp. 432–433.

[23] Herrmann (Otto). Ueber die Dauerhaftigkeit der Immunität gegen Tollwut —*Cent. f. Bakt.* I. Abt. Orig. 1925. Aug. 1. Vol 95 No. 7-8. pp 433–436. [3 refs.]

[24] Schnürer (Josef). Zur Frage der prophylaktischen Impfung der Hunde gegen Lyssa.—*Wien. Klin. Woch.* 1925. Oct. 15. Vol. 38. No. 42. pp. 1133–1134.

[25] Busson (Bruno). Zur Frage der prophylaktischen Impfung der Hunde gegen Lyssa.—*Wien. Klin. Woch.* 1925. Oct 15. Vol. 38. No. 42. pp. 1134–1135.

MISCELLANEOUS.

FOLEY (H.) & MESLIN (R.). Exploration scientifique des oasis du Gourara et du Touat (Mars-Avril 1913). [**Scientific Exploration of the oases of Gourara and Touat.**]—*Arch. Inst. Pasteur d'Algérie.* 1924. Sept. Vol. 2. No. 3. pp. 263–302. With 3 maps & 16 figs. [42 refs.]

An interesting report of an expedition made 11 years ago through the typical Saharan desert tracts of Southern Algeria to the oases of Gurara and Twat. These oases skirt the relics of a chain of lakes or river which in the time of the fathers of the present generation floated feluccas. The waters that still exist are distributed for use in underground canals. The inhabitants are Berbers, Arabs, and lower classes of negroes and negroids; many of them have never been beyond their own district, and their only communication with the world is by visiting caravans. Dates are the principal food and their sole trade. Cereals and vegetables just about sufficient for use are cultivated. There are some domestic animals—camels, goats, long-legged sheep, fowls—though not enough to use as daily food. Caravans sometimes bring dried meat, and locusts can be eaten. On the whole, food is never plentiful, and there are times when the people are on the verge of starvation. Malaria is endemic. Of 1,190 children up to 15 years of age examined, 6·2 per cent. had parasites in the blood without enlargement of the spleen, 1·4 per cent had parasites and enlargement of the spleen, and 2·8 per cent. had enlargement of the spleen without discoverable parasites. All the three usual species of malaria parasites were observed. The examination was made in March-April. At that time there were no adult mosquitoes; but their breeding-places were quite numerous, in which *Anopheles multicolor* was the only species found. Tuberculosis exists; cutireaction tests of 601 children from 1 to 15 years of age were made, with positive results in 40·2 per cent. Trachoma is prevalent; 2,050 individuals, male and female, of all ages, were examined, all but 179 being negro or negroid, and evidence of the disease, and of its being acquired early in life, was found in 88 per cent.; these observations hardly verify the belief that the negro—apart from his native environment—enjoys natural immunity.

The report includes observations on veterinary pathology and annotated lists of the animals and plants collected. Among the animals the following may be noticed:—Ticks (*Argas persicus*), insects (two species of Tabanus, *Holoconops mediterraneus*, larvae of *Anopheles multicolor*, Culex, and Theobaldia, *Haematopinus ovillus*), mollusca (*Melanopsis cossoni* and other species, *Melania tuberculata*, and *Limnaea palustris* var. *corvus*).

A. Alcock.

BRAIMBRIDGE (C. V.). **Some Surgical Cases of Interest recently seen in the Native Hospital, Nairobi.**—*Kenya Med. Jl.* 1925. July. Vol. 2. No. 4. pp. 121–124.

Five interesting cases are here reported; they illustrate the far-spreading influence—quite unappreciated by the average politician—of the well-trained medical officer among native tribes.

(1) A male adult Masai, with 2 painful abdominal tumours said to be of 2 years' gradual growth. At operation they were found to be hydatid

cysts, but merely 2 of many scattered through the entire mesentery. Two separate operations were necessary for their complete removal, a pailful being removed at the first. Twelve days after the second the patient went away quite recovered.

(2) A young male Msambara, pale and wasted, with pain and swelling in the spleen region of a year's duration, and a story of attacks of fever and of painful vomiting after meals. No fever beyond two slight rises in first 14 days; no evidence of malaria or kala azar; but there was an eosinophilia, probably explained by tape-worm eggs in the faeces. A course of quinine orâ and antimony-tartrate intravenâ had no effect. A month after excision of the spleen the man was in normal good health. The spleen, which weighed between 50 and 60 oz., showed " slight fibrosis and atrophy of the cellular elements." The author suggests Egyptian splenomegaly.

(3) An adult male Muganda, with pain below the right ribs of a year's duration. No history of any intestinal disorder. Blood and faex normal; liver dulness increased, and a right hypochondriac tumour suggestive of enlarged gall-bladder. Emetine having no effect, cholecystotomy was done. The gall-bladder was enlarged and thickened among extensive adhesions, and the bile gave an almost pure culture of *Bacillus typhosus*. This discovery furthered examination of faeces and a Widal test, but both were negative.

(4) An elderly Mkamba, with pain and swelling in the abdomen; temperature normal. His abdomen had been deeply pierced by an arrow on an occasion synchronizing with an authentic event of 25 years ago; the shaft of the arrow had been pulled out, but the head had remained, and had given trouble ever since. The swelling, which gave the impression of a tensish cyst, was found, at operation, to be a mass of sterile pus stanchly isolated by omentum and adhesions; and when 12 ounces of pus had been removed an included arrow-head was found and extracted. A drainage tube was inserted, and at the time of this record the patient is in excellent health.

(5) A Kikuyu boy, who had imbibed a leech. The tail of the leech could be seen hanging from the nasopharynx A strong solution of common salt was gargled and also syringed through the nostrils and the leech was then extracted by the tail with a bullet forceps.

A. A.

CORRADO (Eugenio). Contributo alla geografia medica della Somalia Italiana. [**The Medical Geography of Italian Somaliland.**]—*Pathologica*. 1925. August 15. Vol. 17. No. 402. pp. 438–441.

The author, at the invitation of the Governor of Italian Somalia, spent seven months, from September 1924 to April 1925, in Wagoscia, and records in this paper the chief diseases met with. The district must be a veritable gold-mine for the clinician and pathologist. Very few details are given, and so short a stay could hardly have allowed for much in the say of minute investigation. Most of the diseases incidental to warm climates were observed. Mention is made of the following:—Malaria, tertian and subtertian; trypanosomiasis (animal), conveyed by *Glossina pallidipes*; dysentery, amoebic and bacillary; yaws and syphilis; relapsing fever associated with *Sp. duttoni* and transmitted by *O. moubata* and *O. savigni*; dengue; mycetoma; tuberculosis and bronchial spirochaetosis; actinomycosis and sporotrichosis; schistosomiasis, both vesical and intestinal; elephantiasis; helminthic infections are represented by Trichuris, Ascaris and Oxyuris. Cutaneous ulcerations are frequent. Notable diseases not met with were:—Enteric fever; undulant fever; leishmaniasis (which, it is stated, may possibly exist, although the author himself saw no cases), and ankylostomiasis. Leprosy is very rare, only one case being encountered.

H. Harold Scott.

UNITED FRUIT COMPANY. **Medical Department. Thirteenth Annual Report. 1924.** [DEEKS (William E.).]—247 pp. With 1 map and 14 figs. [35 refs.]

This Report is full of matter to interest both the practitioner and the hygienist. Of 1,952 white employees from temperate zones 15 died in 1924, but only 2 from infections of distinctly tropical origin—malaria and blackwater fever. The principal infections resulting in the repatriation of employees during 1924 were tuberculosis 25 per cent., beriberi 15 per cent., malaria 13 per cent., chronic nephritis 10 per cent—63 per cent. These four conditions were responsible for more than half the total number of deportations.

Dr. Deeks writes that it is impossible to emphasize too strongly the importance of careful and complete laboratory examinations of all patients treated in tropical localities. That those of the United Fruit Co. get them is evidenced by the table :—

	1923.	1924.
Hospital patients	28,398 ...	29,766
Blood examinations...	31,378 ...	39,508
Urine examinations	28,560 ...	33,524
Stool examinations	25,887 ...	28,753

A table is given of secondary diagnoses among discharged hospital patients, which brings out the prevalence of malaria, syphilis and hookworm [number of worms not stated]. To these diseases "is attributable the greater proportion of the morbidity in the Tropics of the Western Hemisphere." Of cases at the Almirante Hospital in Panama malaria was present in 53 per cent., hookworm in 50, and syphilis in 7 per cent. A questionnaire was submitted to each salaried employee of the Tropical divisions of the Company who was born in the Temperate Zone. From 1,000 of these the following data were derived :—

"The typical 'Average Employee' had resided in the Tropics for 6 years and 11 months He was absent from duty, from all causes, 6·23 days during the first year; and, of this number of days' absence, 3·35 were due to illness. The second year of residence he was incapacitated 4·8 days on account of illness. During his entire period of residence in the Tropics, he loses 3·35 days annually owing to illness; averaging 1·45 days in the hospital. He loses an additional 1·9 days, absent from duty, but not sent to the hospital. In other words, for 43 per cent. of the time he is ill, he is confined to a bed; and for the rest of the illness period (57 per cent.), while he is not capable of assuming his duties, still he does not find it necessary to remain in bed.

"Approximately 41 per cent. of the employees entered the hospital for treatment during the period of their employment (6 years, 11 months), while about 59 per cent. did not.

"In the course of 6 years and 11 months, 1,000 employees were absent from duty 23,121 days, including 10,038 days spent in the hospital.

"Approximately 99 per cent. of the employees had been vaccinated, and 96·5 per cent. received successful vaccinations; 2·6 per cent. did not have positive results, despite repeated vaccinations.

"The hearing of 7·1 per cent. was below normal,—while 30·7 per cent. wore eye-glasses all or part of the time.

"Either life or accident insurance is carried by 51·2 per cent.

"It was found that 72·3 per cent. of the employees remained in the Tropics for more than one year of continuous service.

"An especially interesting fact is that 17·9 per cent. of the employees abstain from the use of tobacco, and 25·4 per cent. abstain from the use of any kind of alcoholic liquors.

"Among the persons submitting questionnaires, the following percentages reported excessive use of the products here named: Canned goods, 4·1 per cent.; tobacco, 4·1 per cent; green vegetables, 2·3 per cent.; meat, 1·8 per cent; sugar and starchy foods, 2·0 per cent.; coffee 0·1 per cent.

"The data show that 38·8 per cent of the employees were married, and in the families of these employees there were 383 children born in the Tropics. Of this number, 357 children survived the first year, so that there was an infantile death rate of 67·89 per 1,000 While we do not possess a record of the present ages of the children, there are 342 still surviving—a fact which indicates that the mortality among children born and raised in our divisions is not higher than in northern climates.

"It is interesting to know that 44·6 per cent of the employees in the tropical divisions have not suffered from any disease or illness during their residence there.

"The only conditions causing much morbidity among salaried employees, and the percentage of such employees contracting these conditions, are: Malaria, 44·9 per cent, dysentery, 5·3 per cent; influenza, 4·1 per cent; appendicitis, 3·0 per cent, typhoid fever, 1·8 per cent; pneumonia, 1·7 per cent, external causes, 1·7 per cent, hookworm, 1 per cent.; boils, 1·1 per cent, ulcers, 1·0 per cent, rheumatism, 0·8 per cent.; yellow fever, 0·8 per cent, jaundice, 0·7 per cent, blackwater fever, 0·7 per cent. None of the other diseases was responsible for more than half of 1 per cent morbidity

"Of the employees, 39·3 per cent were working in screened quarters, and 60·7 per cent were working outdoors or in unscreened quarters. However, 97·6 per cent. slept in screened quarters or under mosquito nets. Apparently, the fact that employees worked in screened quarters had little bearing upon the morbidity from malaria, for 43·2 per cent of the employees working in screened quarters contracted this disease, as compared with 44 9 per cent among all employees But it must be remembered that few of the salaried employees were on duty during the hours when mosquitoes are a menace

"There were 596 cases of malaria among the 1,000 employees averaging 6 years and 11 months of residence, or 86 cases per 1,000 employees annually. Each case averaged 8·9 days in the hospital, and was incapacitated for duty 15·2 days Only 11·2 per cent of the cases reported any marked after-effects from the attacks of malaria, and in practically all these instances the only bad effects were loss of weight and general weakness lasting for from 1 or 2 weeks to 6 months. Only 4 cases reported more or less permanent detrimental results: (1) Weak, deaf, dumb and blind temporarily; (2) bad memory, (3) weak eyesight; and (4) jaundice.

"Among the 449 patients suffering from malaria, 162 (36·1 per cent.) had one or more recurrences during their period of residence averaging 6 years and 11 months

"Of the employees, 17·8 per cent. contracted malaria during the first year of residence in the Tropics. During the second year of residence, 9·0 per cent. of those who previously had developed no symptoms of infection, contracted malaria."

Less than 1 per cent. of the employees, or seven persons, developed blackwater fever during their tropical residence. Details of each are given, and it is noted that subsequent to the attack these persons were apparently immune to malaria for a number of years. Some pages are given to accounts of cases treated with mercurochrome soluble. Twenty-six cases of pneumonia were thus treated with five deaths, or less than 20 per cent., whereas the mortality in that division over a period of four years was 49 per cent. 15 cc. of a 1 per cent. solution was given every second day while the fever lasted. It is concluded that mercurochrome materially lowers the death rate, hastens the crisis, and shortens the period of convalescence. The general conclusion is drawn that "mercurochrome is a valuable addition to our medical armamentarium in the treatment of many conditions encountered in the Tropics."

At the Tela Hospital, a thin and a thick blood film was made from each patient admitted to hospital; of 702 positive films—

The thick film was positive 427 times;
The thin film was positive 16 times;
Both films were positive 259 times.

"Thus there were 152 examinations that would have failed to disclose the presence of parasites by the old thin-film method." The following pair of tables is instructive:—

Incidence of Malaria at Autopsy.
(Disregarding the disease causing the death.)

	Cases.	
Parasites and pigment, present in ...	25	
Pigment present in spleen and rib marrow, in	29	(78·2 per cent. positive)
Negative for pigment or parasites, in ...	15	(21·7 per cent. negative)

Same Cases before Death

	Per cent.
Positive for malaria	39·1
Negative for malaria	52·1
Died before an examination could be made ...	8·6

An investigation by Dr. HEGNER in three tropical divisions, in which 286 stools were promptly examined once, showed *Trichomonas hominis* to be present in 20·6 per cent., *Chilomastix mesnili* in 7·7 and Giardia in 2·1 per cent. He attributes the high incidence of the first two to (1) the high temperature and moist climate, (2) the insanitary habits of the natives, and (3) vegetable diet. These results are compared with those of JEPPS and of BOECK & STILES [this *Bulletin*, Vol. 20, p. 781; Vol. 21, p. 422].

A. G. B.

ROBINEAU (Marcel). Les causes de la morbidité dans le bataillon de tirailleurs sénégalais d'Arles-sur-Rhône pendant l'hiver 1924–1925. **[Causes of Illness in a Senegalese Battalion at Arles during the Winter of 1924-5.]**—*Ann. de Méd. et de Pharm. Colon.* 1925. May–June–July–Aug. Vol. 23. No. 2. pp. 315–324.

The Senegalese battalion reached France from Constantinople, where it had passed the preceding winter, in September, 1923. To fill numerous gaps two drafts were received from Africa, one in April 1924, the other in July. There were thus three categories of men—(1) seasoned and selected native soldiers, (2) the first draft which had become almost completely acclimatized before the winter 1924–5, and (3) the second draft which had not had time to become acclimatized. The town of Arles, 86 miles from Marseilles, is in winter subject to the mistral and wide differences of temperature in the 24 hours. The soldiers' home (Foyer du Soldat) is, or was, situate on the north side of the barrack in a half basement, and other unsatisfactory details are given. Each draft was medically examined on arrival; the first was fairly satisfactory, in the other there were cases of mumps, malaria, alastrim and other affections. The table shows the differences in morbidity and mortality between the three categories. Another table shows the source of these native troops; they came from 51 "circles" in various parts of French West Africa; no racial differences were detected.

Nine-tenths of the morbidity and mortality at Arles were due to the pneumococcus, which is especially deadly when the troops have to endure their first cold weather before their sixth month. Measures calculated to minimize these losses are suggested, e.g., more careful examination at the monthly inspection, weekly inspection of the ailing, who would be put on light duty, early evacuation to the Frejus hospital. where cases of early tuberculosis are watched, of any ill over a month. [It is unfortunate that the author gives no indication of the numbers in each group.]

Period from March 15th, 1924, to February 15th, 1925.

Categories.	Number.				
	Exemptions from service.	Admissions to infirmary.	Admissions to hospital.	Evacuations to tuberculosis hospital	Deaths.
	Per cent	Per cent	Per cent.		
Constantinople nucleus ...	104	30	12	7=2%	4=1.1%
April draft ...	241	86	31	14=5%	0
July draft ...	412	139	47	15=7·5%	14=7%

A. G. B.

Moragas y Gracia (Ricardo). Ueber die Häufigkeit und die Besonderheiten einiger parasitärer Krankheiten in Spanien. [**The Frequency and Features of some Parasitic Diseases in Spain.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 261–268.

The author, who is Professor of Bacteriology and Hygiene at Barcelona, discusses malaria, leishmaniasis and rat-bite fever in Spain. No province is quite free from malaria. Recent statistics show that the annual mortality exceeds 2,000 and taking the mortality to the morbidity as 8 : 1,000 he estimates that nearly 250,000 cases occur yearly, a loss of more than 5 million working days. He divides Spain into three areas according as the malaria mortality lies between 10·4 and 1·5 per 10,000, 1·4 and 0·4, and below 0·4 per 10,000, naming the provinces included in each category. The disease is endemic chiefly in the south and east, but the most afflicted province is an internal one, Caceres, where in 1923 41 per cent. of 7,134 persons were microscopically diagnosed as infected. There are four foci in Catalonia, the most severe near Tortosa at the mouth of the Ebro; in this division of Spain a Society is at work combating the disease. The commonest form is the tertian and, next, the quartan. Subtertian is found at Tortosa, and is frequent in Caceres and a large part of Andalusia.

Kala azar was first found in Spain in 1912, at Tortosa. Many cases have since been identified and more than 100 are now known [according to PITTALUGA 343 cases have been proved bacteriologically]. The disease is found in the coastal strip which borders the Mediterranean and also in provinces far removed from the sea, as Caceres and Madrid. The author has diagnosed four cases in children at Barcelona by spleen puncture, and gives a description of them. Oriental sore occurs on the Granada coast and in South Spain; no figures are given.

He has seen two cases of rat-bite fever but has not apparently detected the Leptospira. One case, that of a child bitten in its cradle, had just completed a course of anti-rabic treatment, on medical advice. Other cases have been reported.

A. G. B.

FRANCHINI (G.) und Mitarbeiten. Arbeiten aus der Scuola di Patologia Coloniale der Universita di Bologna (Italia). **[Papers from the School of Tropical Medicine, University of Bologna.]**—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 108–119.

G. Franchini and his colleagues contributed several short communications to this "Festschrift."

FRANCHINI himself reports two cases of amoebic cystitis from an area in Bologna where there is a focus of amoebic dysentery. In one case there was concomitant dysentery, in the other the symptoms concerned the bladder only. There is no description of the parasites. FRANCHINI and GHETTI describe a case of rat-bite fever in a boy from Faenza, in Bologna. The spirochaete was found in centrifuged blood obtained in a bout of fever, of which there were 11 attacks in all, and the organism was recovered from one of three inoculated guineapigs. A dose of arsenobenzol brought the illness to an end. FRANCHINI and MAGGESI describe a case of blackwater fever in a man from Belgian Congo, who died at Bologna in his third attack. Laboratory investigations in life were made as well as a post-mortem. No signs of Plasmodium could be found, but spirochaetes were obtained from the blood and from the spleen after death, and were transmitted to guineapigs. [The details are meagre.]

COSIMO examined over a thousand Anopheles collected from houses and byres respectively in Emilia and Ferrara. The maxillary teeth varied in number between 14 and 15, whether malaria was present or no, and not in accordance with ROUBAUD's observations. EUGENIO gives a brief description of the diseases met with in six months in the Wagoscia district of Italian Somaliland (Juba river). MARTINELLI states that limited and transitory epidemics of bubonic plague have recently occurred over nearly the whole of Somaliland. That which came under his observation began in 1923, spread gradually to about 50 villages on the middle Uebi Shebeli river and in January 1925 had disappeared. The epidemic was relatively mild; the river was an important factor of spread, especially when in flood. [Further details would be of interest.]

PULLÈ has made 160 examinations of cases of appendicitis for amoebae and flagellates—fresh and stained smears and sections—with the following results :—*E. histolytica* 10 per cent., *E. coli* 5, undetermined amoeba 8·5, flagellates 2·1, *Blastocystis hominis* 43·7 per cent. [no figures for healthy appendices]. He thinks that in every case of appendicitis the stool should be examined for parasites and the appropriate parasiticidal drug given.

A. G. B.

SPAAR (Eric C.). **Some Observations on the Common Endemic Fevers of Ceylon.**—*Jl. Trop. Med. & Hyg.* 1925. Oct. 1. Vol. 28. No. 19. pp. 349–352. [6 refs.]

Malarial fevers.—CARTER in Ceylon finds that splenic enlargement in school children reaches a percentage of 60–70 in the northern half of the island and 40–50 in the south-east; the hilly districts and the south-west are free from malaria. At the Colombo Hospital benign tertian accounts for 80 per cent. of malarial cases, and subtertian for 18 per cent., but a large percentage of the cases are relapses; only one case of malarial haemoglobinuria [which the author distinguishes from the unknown blackwater fever] has been heard of in 18 years. Sequelae mentioned (without details) are "those affecting the nervous system", cirrhosis of liver, diabetes (three cases, see also this *Bulletin*, Vol. 19, p. 293), myocardial degeneration causing chronic heart disease, and chronic Bright's disease.

Intestinal fevers.—Of these, typhoid is by far the commonest, and a special hospital has been built for the patients in Colombo. The type is mostly mild, certainly milder than two decades ago, but in Europeans it is severe. Of complications parotiditis is most common and then haemorrhage. About 3 per cent. of intestinal fevers are paratyphoid A which runs a mild course; paratyphoid B is very infrequent, and of paratyphoid C there is no record.

Parenteric fevers.—These give negative agglutination tests for the enterica group. Some in Ceylon are due to *B. columbensis* and *B. asiaticus* of CASTELLANI. The prognosis is very favourable. Reference is made to KHALED's paper [*l.c.* Vol. 21, p. 662].

Relapsing fevers.—Unknown in Ceylon except for rat-bite fever.

Kala azar.—True kala azar is not seen, but "pseudo-kala azar," with the symptoms of anaemia, emaciation and splenomegaly, is by no means infrequent.

Dengue and allied fevers—Dengue first appeared in 1905; it is prevalent in the low-lying sea-coast towns in the south-west monsoon but not inland; it produces the saddleback type of temperature and joint pains, which, however, are less severe than formerly.

Filarial fever.—Is very frequent and usually mistaken for malaria, especially before elephantoid changes have occurred.

Plague.—Is not seen outside Colombo.

Fevers due to helminth infection.—Fever in hookworm infection is either intermittent or irregularly remittent; it is stated that splenic enlargement is found with this infection apart from malaria. This and fever due to *A. lumbricoides* infection are often thought to be enteric.

A. G. B.

SEYFARTH (Carly). Infektionskrankheiten und ihre Bekämpfung unter den kleinasiatischen Flüchtlingen in Griechenland, Kreta und Korfu. [**Infectious Diseases and their Control among the Refugees from Asia Minor in Greece, Crete and Corfu.**]—*Ztschr. f. Hyg. u. Infektionskr.* 1925. June 6. Vol. 104. No. 4. pp. 682–702. [35 refs.]

Since the winter of 1922–3 a compulsory migration on a vast scale has been taking place between Asia Minor and Greece. We are concerned here with the one and a half million Greeks who left Asia Minor, unrecorded thousands of whom have succumbed to infectious disease

The author with the support of the Greek Government visited the mainland, Crete and Corfu from August to the end of October of 1924 and gives an account of the epidemic diseases among these refugees

Typhus—This disease was almost unknown in Greece before the Great War In 1917–19 there were epidemics of moderate extent and in 1922–3 outbreaks in almost all the towns With the return of the Greek army after the fall of Smyrna, Piraeus and other towns were flooded with lousy soldiery, and fresh fuel and infection were added with the first rush of fugitives Exact figures cannot be given, but at the Piraeus infectious diseases hospital in 1923 1,286 cases of typhus were treated with 172 deaths (13 5 per cent) The course in the refugees was much milder than in the natives, a mortality of 7–10 per cent as against 18–30 per cent , owing to the fact that the disease is widespread in Asia Minor and the refugees had some degree of immunity In its control the measures taken had some effect, but probably less than the hot summer and burning sun of Greece had on the lice By the middle of 1924 when the disease had almost disappeared effective quarantine stations were in use at Salonica and Piraeus

It was observed here as elsewhere the children often had very mild attacks

Relapsing fever—Relapsing fever was almost unknown before the Balkan wars and was introduced with the troops returning from Macedonia It increased when typhus did, but was never so severe and by the summer of 1923 there were only a few cases

Smallpox—An outbreak of smallpox occurred at Piraeus in November and December 1922 with the arrival of the first refugees Of 749 cases in the infectious hospital 34 per cent died The movement of the fugitives carried the disease to many of the islands, where severe epidemics occurred In January vaccination on a large scale was commenced, and in Athens and Piraeus 500 000 refugees and 250,000 natives were vaccinated By this means the epidemic was brought to a standstill During the author s visit he did not see a single case

Bacillary dysentery—Bacillary dysentery previously present in Greece flared up in the refugee camps in summer and autumn of 1923, where crowding want of hygiene, the plague of flies, favoured its spread At Salonica between September 1922 and November 1923, 998 refugees died from this cause, and at Piraeus 889 GAUTHIER's Commission carried out prophylactic immunization by the mouth and 30 000 persons were so treated in summer and autumn of 1923 [see this *Bulletin* Vol 21, p 354] The results appear to have been good The following is worth quotation —340 refugees in a camp at Phaleran were vaccinated by the mouth and transferred to new barracks alongside those occupied by other refugees among whom dysentery was epidemic They drank the same water, which was much fouled and was doubtless the source of the dysentery, but the newcomers were not affected The Greek doctors told the author of other instances in which oral vaccination gave protection

Amoebic dysentery—This form of dysentery did not affect the refugees It is, however, not uncommon in Greece, and the author in his brief visit saw four cases in persons who had never left their home country , in one of these, autopsy revealed a liver abscess

Cholera—No cases occurred among the refugees, but whether this was due to the "tetravaccine" they received the author cannot say

Enteric fever.—Enteric is endemic in many Greek towns, especially Athens, where the water supply is both bad and insufficient, so that the inhabitants are often dependent on polluted sources. Small epidemics occurred among the refugees. The "tetravaccine" (typhoid A and B, cholera) was used on a big scale—up to October 1923, 1,143,961 inoculations, and an oral vaccine also to a smaller extent.

Paratyphoid A and B.—These forms are widely distributed in Greece, but did not spread much among the refugees.

Trachoma.—Trachoma is a serious disease in many parts of Greece, especially on the islands. In a small town in Crete half the inhabitants were trachomatous. The danger of its spread by the refugees is great, and the author saw very many cases among the refugees in Corfu, where the affection is rare.

Tuberculosis is very prevalent among both the inhabitants and refugees. In Athens in 1923 it accounted for 19·8 per cent. of the total mortality.

Malaria.—In ordinary times malaria is very prevalent in Greece; it is stated that between 1900 and 1914 the average percentage affected yearly was 29, Salonica, Macedonia, Thessaly and West Thrace being the most affected districts, and the years of unrest before the great war increased the malaria. From November 1922 onwards 120,000 refugee families, say 520,000 persons, were settled in Macedonia and West Thrace under conditions of deficient nourishment and unusually heavy rains. In a camp nearby Salonica between July and October 1923, of 10,000 persons 90 per cent. had malaria, and of these 700 (70 per mille) died, and other similar statistics are given.

Blackwater fever was not infrequent where malaria was severe.

Plague.—Plague was introduced into Piraeus in 1913, and every year since between July and December there have been 20 to 30 cases. After the war it spread to other ports, and in 1914 appeared in nearly all, probably owing to the trade in corn. However, it never appeared in refugee camps, nor did it spread inland.

The paper concludes with an account of the exotic diseases met with in Greece. A list is given of the numerous places where *kala azar* is found. Six cases were shown to the author on the small islands of Spezzia and Hydra and a healthy man of 18 who had suffered from the disease as a child (Leishmania found). LIGNOS, who has practised medicine on Hydra for 24 years, says that 10 per cent. recover without treatment. *Dermal leishmaniasis* also occurs, especially in Crete. In Canea ("Caneotika" is the vernacular for tropical sore) 20 fresh cases were shown to him. Phlebotomus is common in the Cretan towns. *Pappataci fever* was shown to be common many years ago, but now is seldom recognized and usually treated as malaria. It does not seem to have affected the refugees much. *Dengue* occurs, but was not seen by the author. *Undulant fever* is widely spread on the mainland and islands. The use of sheep and goats' milk is general. The disease is seldom diagnosed bacteriologically, and the author met with cases regarded as tuberculosis. *Leprosy* also is common, especially in Crete (*l.c.* Vol. 22, p. 568). *Mycetoma* was reported in 1912. It is not uncommon and probably most cases are taken for leprosy. *Pellagra* was spoken of in Corfu and the Ionian Islands. *Ankylostomiasis* is rare.

A. G. B.

LEVADITI (C.). **The Therapeutic Properties of Stovarsol (Acetylamino-phenylarsinic Acid, "190").**—*Lancet.* 1925. Sept. 19. pp. 593–595. [39 refs.]

Stovarsol, the acetyl derivative of amino-oxy-phenylarsinic acid, was prepared in Germany in 1908 but was not systematically studied, because its arsenic was in pentavalent form, till 1922, when FOURNEAU and his co-workers purified it and tested it on animals and man by injection. Levaditi then tried it by the mouth and found that it had a distinct prophylactic and curative action in syphilis. It is in fact distinctly more active after ingestion than after parenteral employment, owing probably to changes which take place in the intestine and liver. The author proceeds to review the records of its use in syphilis, in yaws, in amoebiasis, lambliasis, "blastocystic diarrhoeas" and malaria ; many of the papers have been summarized in these pages. The conclusion is that stovarsol, given by mouth, is more or less effective in all these conditions. "The efficacy of the method and its exceeding simplicity, . . . render it worthy of the attention of medical men." The list of papers will be very useful to the serious enquirer.

A. G. B.

KESSLER (Adolf). Ueber das Verhalten des Yatrens im Organismus. **[Behaviour of Yatren in the Organism.]**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Aug. 1. Vol. 29. No. 8. pp. 380–387. [10 refs.]

The results of the author's experiments, samples of which are set out in tables, led to the following conclusions :—

Yatren cannot be introduced into the organism by inunction. Iodine must be split off in the tissues. Iodine and yatren are excreted in the urine most quickly after intravenous and intramuscular injection. The excretory period for iodine is longer with the intravenous than the intramuscular route. The elimination of both substances in the urine is delayed and decreased in administration by the mouth, suggesting increase in the excretion by the intestine.

A. G. B.

CHAU (K. T.) & WRIGHT (J. M.). **Gynecological Notes : Canton Hospital.**—*China Med. Jl.* 1925. Aug. Vol. 39. No. 8. pp. 684–687.

The statistics of menstruation and the menopause, etc., here presented were obtained incidentally from 2,291 patients at Canton, where the climate is subtropical. It must be premised that owing to the Chinese method of computing age, one year has been deducted in all instances from the age stated. The patients were of all classes. The summary is as follows :—

"1. Average age of Chinese girls at onset of menstruation, 14·5 years.

"2. Average age of Chinese women at menopause, 45 years.

"3. Average age at marriage, 17½ years.

"4. Average age at birth of first child, 20½ years.

"5. Average number of children of 457 women who had passed the menopause, 5.

"6. Deaths of children, including those of all classes, during first five years of life, about 55·5 per cent.

"7 Deaths of children during first five years of life, among middle and lower classes, about 69 5 per cent of all children born

"8 Sex ratio. of 7,854 children, 3,555 (45 27 per cent) were males, and 4,299 (54 73) were females"

The table gives details of the age of onset of menstruation.

Age at onset (Western reckoning)	Number of cases	Percentage of total
9	1	·043
10	2	086
11	274	11 96
12	154	6 72
13	286	12 48
14	354	15 45
15	505	22 04
16	353	15 41
17	205	8 94
18	70	3 05
19	54	2 4
20	17	·724
21	8	·35
23	3	13
25	4	174
26	1	043
	2,291	

[The authors state that the age of onset of menstruation in Greenland is 17–23 Among the Eskimos, according to STEFANSSON (*Jl Amer. Med Assoc* 1920, Vol 75, p 669) there are records of children born before the mother was eleven, and the average of maturity is from the 10th to the 13th year This he attributes to the fact that the typical Eskimo lives under tropical or subtropical conditions The average temperature in the house at the mouth of the Mackenzie river in which he lived during a winter was above 80° F "While an Eskimo is indoors his entire body is exposed to a local climate as warm as that of Sicily, and when he is outdoors he carries that climate about with him inside his clothes and applicable to 90 or 95 per cent of his body area"]

A G B

AMERICAN MISSION HOSPITAL, Petchaburi, Siam **Annual Report April 1, 1924 to April 1, 1925.** [NEDERGAARD (Niels)]—16 pp Printed at Wah Cheong Press, Bangkok

The period really covered by this report is November 1921 to April 1925 The capacity of the hospital is 32 beds We read —

> "The equipment is very meagre and the buildings inadequate and unpractical for present day needs The lower floor of the main building is more than a foot below flood level making drainage a difficult problem. Under the very eaves of the women's building is a small crowded village over which we have no control It is a danger in case of fire, and a pest hole of germs and parasites"

The statistics show that 420 patients were admitted to the hospital and 2,100 were seen as out-patients, the great majority were Siamese and Chinese The laboratory report shows 600 blood examinations, stool examinations 509, urine 544, sputum 25 , a total of 1,729 At the head of the list of general diseases occur yaws, typhoid, malaria, syphilis, tuberculosis, leprosy, in that order , eye disease figures largely Notwithstanding the unhygienic character of the hospital environment there were only 24 deaths

A G B

CLELAND (J Burton) **Plants, including Fungi, Poisonous or otherwise, Injurious to Man in Australia.**—*Med Jl Australia* 1925 Oct 10 12th Year Vol 2 No 15 pp 443–451 [48 refs]

MACPHERSON (John) **Dermatitis caused by Queensland Maple.** [Correspondence]—*Ibid* Oct 31 No 15 p 542

The author published a paper on this subject in the same Journal in 1914 and now records information that has come to hand since some from 18th century records in the journals of explorers It is not possible to give more than a bare catalogue Among plants injurious on ingestion are included croton berries, acacia seeds (Expedition Range), cassia seeds, eucalyptus oil, the fruits of Macrozamia (a Cycad), Livistona palm Pandanus fruits (used as food by the aborigines) crude maize, toadstools plants containing poisonous alkaloids (all Solanaceae) are *Solandra longiflora* and *Brugmansia knightii* (local mydriatics), *Duboisia hopwoodii* and *Datura stramonium* , a plant producing urticarial wheals is the giant nettle *Laportea gigas* plants causing inflammation or irritation of the skin and eyes symptoms which may be due to specific protein sensitization are *Pseudomorus brunoniana* and *Ficus stipulata* (Moraceae) common ivy parsnips *Grevillea robusta*, species of Anacardium, species of *Melaleuca* including *linearifolia* (the tea-tree the source of irritation may be a hairy caterpillar) several species of Eucalyptus Acacia species (where again an insect may be the real cause), *Sechium edule* (the effect of which is anaesthetic), hops, stinkwort (*Inula graveolens*) *Xanthium strumarium* (a burr), yams, arums (Colocasia) plants causing disorders of the respiratory system are plant pollens, Queensland red bean (*Dysoxylon muelleri*) and various woods which cause nasal irritation especially the Californian red pine (*Sequoia sempervirens*) a well-known source of irritation in Australian workshops and finally, red rust spores inhalation of which may be associated with pneumonia A case of squamous epithelioma is recorded following injury from a boxthorn prickle, and several plants are mentioned which cause mechanical injuries The list of references will be very valuable to anyone pursuing the subject

Dr Macpherson records a case of acute dermatitis caused by working with the wood of the Queensland maple (*Flindersia* sp N O Rutaceae)

A G B

HARVEY (W F) **Bacteriological and Laboratory Technique. Section XII. The Microscope.**—*Indian Jl Med Res* 1925 July & Oct Vol 13 Nos 1 & 2 pp 53–93 , 229–261

The author in this monograph on the microscope continues his series of articles on Bacteriological and Laboratory Technique This is the 12th section of treatment of the subject, which now extends to the proportions of a good-sized volume It is not only the laboratory worker who uses the microscope, but every medical man. His knowledge of this important instrument is often very incomplete. In this monograph there is given a wealth of detail of the operations connected with the use of the microscope, and the "notes" which are appended to the description of the technique themselves make a considerable addition to the whole work. There are no illustrations whatsoever, which is very unusual in a subject such as this: but the technique is given step by step in great detail and with a certain amount of repetition, and this should make it easy for the worker to use the descriptions with facility. The subject is treated seriatim according to the parts of the microscope as a whole, and of the photographic camera. In this way we have a description of the use and care and choice of objectives, condensers, oculars, diaphragms, mirrors, stage, etc.; the adjustments connected with focussing, centring, drawing and projection; the various forms of direct and oblique illumination both bright field and dark field; the use of vernier scales; methods of measurement, drawing, determination of magnification, projection, and, indeed, most of the detail of the use of the microscope. A very detailed index on the decimal system accompanies the article, which enables the user to find the point he seeks with great facility whether it be contained under a main heading or under a lesser heading or even in a note.

A. G. McKendrick.

CASTELLANI (Aldo). **Biochemical Characters of Certain Bacteria, when living in Association or Artificially Mixed, and when living Separately.**—*Brit. Med. Jl.* 1925. Oct. 24. pp. 734–735. With 3 text figs.

That the typhoid bacillus and the dysentery bacillus should be shown to be gas producers would certainly be subversive of accepted doctrine. Castellani shows in this article that *B. typhosus*, when grown with *B. morgani* or with *B. proteus* gives rise to gas production in such sugars as maltose, mannitol, and sorbite, although neither organism does so when grown alone in these sugars. Similarly *B. dysenteriae* Flexner can, in conjunction with *B. morgani* or *B. proteus*, give rise to gas production in maltose and mannitol but not in sorbite. In these two cases one of the organisms produces acid but not gas in the sugars concerned—*B. typhosus* in maltose, mannite and sorbite, *B. dysenteriae* Flexner in maltose and mannite—while the conjoined organism ferments none of them. The experimental conditions for the manifestation of this phenomenon are to sow the sugar-peptone water with the one organism and immediately after with the conjoined organism. Incubation is for 48 hours at 35° C. The author concludes:—

> "The subject is very obscure and requires much further investigation, but the fact remains that with regard to certain bacilli the mixture of two species may produce gas in certain substances although one species produces only simple acidity, never gas, in them and the other neither acidity nor gas."

W. F. Harvey.

MARSHALL (Alexander) & MACDONALD (Norman). **Hints on Tropical Technique.**—*Laboratory Jl.* 1924. Dec. 11 pp.

This paper is a summary of useful hints for obviating a crop of climatic difficulties that tend to distract laboratory routine in the tropics, such as the cleansing and storage of slides, cover-glasses, and pipettes; the storage of rubber tubing; the preparation and distribution of culture media; the keeping of stock cultures; the collection of stools for the microscope and the formulation of the results of the examination; the despatch of blood films; the manipulation of the photography room, the ice-chest, and museum jars. It also contains the full descriptions of a method of standardizing the pH concentration of media and of methods of preparing various special media.

From the microscopist's point of view the only item that seems to be omitted is a little advice on choosing lenses for a hot and moist climate.

A. A.

LICHTENSTEIN. (A.). Het witte bloedbeeld in de tropen beschouwd in verband met dat in Europa. [**The Leucocytic Formula in the Tropics Compared with that found in Europe.**]—*Nederl. Tijdschr. v. Geneesk.* 1925. Oct. 31. 69th Year. 2nd Half. No. 18. pp. 1972–1979. [11 refs.]

The author examined the blood of 20 Europeans (army medical officers) and 102 native soldiers, all well known to him, in perfect health and living under good hygienic conditions. The food of the Europeans was of the western type (not rich in carbohydrates), the main native food was rice. The natives were regularly subjected to an anti-helminthic regime and filariasis was excluded. The biennial anti-cholera and anti-typhoid vaccination is supposed to have had no influence because the examinations were made three months after the last vaccination. The blood was taken before the first meal. The smears were prepared in the ordinary way. They were examined by moving the slide perpendicularly to its long axis, along lines covering the whole breadth of the film; 400 leucocytes were counted in each preparation.

The greatest aberration from the leucocytic formula usually considered as normal was found in the percentage of lymphocytes:

20 Europeans: 25–58·5, average 44·5 per cent.
66 Javanese: 24·5–68·75, average 42·5 per cent.
27 Menadonese: 26–68, average 43 per cent.

The factor of carbohydrates in the food cannot be the cause of this lymphocytosis, because the Europeans, using food comparatively poor in this class, show the highest average (as do also those recently arrived from temperate climates). The authors are inclined consequently to consider these high figures as normal.

The great variability of the percentage of lymphocytes makes it difficult to use this figure for diagnostic purposes, unless the normal figures are known in every instance. The total number of leucocytes is more constant, varying around 8,000, 10,000 being still within the limits of the normal, higher figures rarely so. The same holds for the percentage of the neutrophile leucocytes with non-segmented (rod-shaped) nuclei, which is usually about 5–6 per cent. As to the eosinophile leucocytes, here only a marked difference between Europeans (average 3·4 per cent.) and natives (average 7–7·3 per cent.) becomes apparent, which may be explained by the frequency of helminthic infections (although treated regularly), perhaps also of skin diseases.

N. H. Swellengrebel.

GRIJNS (G. W.). Resultaten, verkregen met de bepaling der bezinkingssnelheid van erythrocyten. [**Results obtained by Determination of the Sedimentation Speed of Erythrocytes.**]—*Geneesk Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 4. pp. 501–510 [9 refs.]

Grijns applied Westergren's method; he made 450 tests. Though the results were not very striking, he ventures to draw the following conclusions:—

(1) Patients with high fever and slow sedimentation speed of the red blood cells are acute malarial patients (provided that no quinine has been administered previously).

(2) Hookworm anaemias cause only a slight increase of the sedimentation speed.

(3) A markedly increased sedimentation speed probably does not occur in healthy people.

(4) It is recommended that the determination of the sedimentation speed be asked for in the questionnaire of life insurance offices.

W. J. Bais.

ADLER (S.) **Autoerythro-Phagocytosis.**—*Harefuah.* Jerusalem. 1925 Apr Vol. 1. No 4–5 English summary p. VII [In Yiddish p. 189]

The author has observed auto-erythrophagocytosis in a fatal case of Theileria infection and in infections of Anaplasma in cattle, in a disease of fowls, and in a section of a Jericho boil, but he has failed to elicit the phenomenon experimentally by producing artificial haemolysis in the healthy rabbit. He therefore concludes that the phenomenon—assuming it to be dependent on haemolysis—requires the mediation of a toxin of some sort.

A. A.

SITSEN (A. E) Over klepvliesgebreken van het hart in Indië. [**Valvular Diseases of the Heart in Netherlands India.**]—*Nederl. Tijdschr. v. Geneesk.* 1925. July 11. 69th Year. 2nd Half. No. 2. pp. 222–233. [15 refs.]

The occurrence of endocarditis has long been known in N.I., but in the Army records it is rare: 0·17–0·23 per cent. among European, 0·11–0·18 per cent. among native troops. Among post-mortem examinations from various parts of the Archipelago the incidence varies from 1 : 15 to 1 : 160. Among 2,168 post-mortem examinations by the author in Soerabaia (mostly adult natives), 19 cases were noted and are described separately. (As a comparison CLAWSON's figures from Minnesota are cited with 220 endocarditis in 3,890 post-mortems.) Of these 19 cases, 3 were of syphilitic nature; *Streptococcus haemolyticus* was found twice; but the etiology of the others could not be made out with a sufficient degree of certainty, though it is probable that *Diplococcus pneumoniae* plays an important part.

N. H. Swellengrebel.

BASU (Uma Prasanna) **Preliminary Observations on Acquired Diseases of the Heart and Aorta as met with in Bengal.**—*Indian Med. Gaz.* 1925. July. Vol. 60. No. 7. pp. 307–310. [10 refs.]

Disorders of the heart among the people of Bengal are due to the myocarditis from which, according to this author, the majority of Bengalis suffer The author attributes the myocarditis primarily to constant heart-strain in the effort to counteract the vasodilation which is the natural effect of the Bengal climate and, as contributory causes, to the poor diet of a poverty stricken people and the prevalence of debilitating diseases like malaria, kala azar, dysentery, and cholera

A A

KNIPPING (H W) Beitrag zur Warmebilanz des Tropenbewohners. [**Heat Balance Sheet of the Tropical Resident.**]—*Arch f Schiffs- u. Trop -Hyg* 1925 Aug 1 Vol 29 No 8 pp 357–368. [19 refs]

The author re-states his previous conclusions that Europeans after long sojourn in the tropics exhibit a reduced basal metabolism which cannot be explained by muscular wasting This, though disputed by some workers has been confirmed by O de ALMEIDA, who has pointed out that these differences may be explained in part by errors in the method used (the Zuntz-Geppert apparatus) This is not only of theoretical interest but is of practical importance in relation to the question of heat-regulation the balance between heat-production and heat loss is perfectly preserved in health, though naturally upset in infectious conditions and in disorders peculiar to the tropics such as heat-stroke The calorie output for the same work is in Europeans in the tropics greater than that of the coloured natives, but these differences in exercises such as sport are lessened by training The part played by skin-pigment and sweating on exposure to sun radiation are factors which are briefly discussed In malarial and similar infections the conditions are more complex but the European races show greater thermolability and slower recovery The questions of difference in habit (sport) and diet (alcohol) also come in and the varying views of different writers (with references) are alluded to as well as personal idiosyncrasies The article is mainly a discussion of differing views, and nothing in the nature of new facts seems to be forthcoming

W D Halliburton

PILLHEER (Ernst) Studien ueber die Warmeregulation bei Heizern auf Tropenschiffen [**Heat Regulation in Firemen on Ships in the Tropics.**]—*Beihefte z Arch f Schiffs- u Trop -Hyg* 1925 Vol 29 No 1 pp 273–283 [15 refs]

The author s interest in the well-being of the sailors on ships in tropical seas dates from 1923, when he served as a young medical officer on one of the British Indian ships , since then he has worked at the subject of heat stroke and other maladies produced by subjection to high temperatures, and he concludes the present paper with some recommendations for the amelioration of the lot of such workers The main conclusion he arrives at is that what is most needed is an efficient system of ventilation, with increased cubic space per head So far as diet is concerned he advises reduction of protein food with increase in the carbohydrate supply, the amount of water supplied to be liberal, though this will largely depend on the diet , alcohol he deprecates Whether such employés should be State servants, as he advocates, is a domestic concern of the Germans Among other points he alludes to the influence of accommodation, the result of training, and the differences in metabolism of the black and white races, which he does not attempt to explain. The different views on the causes of such differences he is content merely to mention, his conclusion that darker peoples are more suitable for work in the tropics will probably meet with acceptance, and is consonant with common sense, though the physiological reasons why may be difficult to state definitely

W D Halliburton

FLEMING (Wm D) **The Basal Metabolism of a Normal Young Man as affected by a Tropical Residence of One Year.**—*Amer Jl Trop Med* 1925 July Vol 5 No 4 pp 283–290 [4 refs]

The subject of these experimental observations is a private in the medical corps of the U S Army, well known to the experimenter and well accustomed to laboratory employments both active and passive His medical history, his family history, and his habits are described, as also is the technique of the experimentation in which he co-operated The experiments were done in the hot season, at Manila, in May 1923 and June 1924 Their results are tabulated and are thus summarized —

> "Basal metabolic rates, respiratory quotients, and other metabolism for a normal white male 22 years old, seven months after arrival in the tropics, and again after a thirteen-months' interval For the first series the basal metabolic rate averaged 3 per cent *minus* for the second series 7 per cent *minus*'

A A.

CHOPRA (R N) & BOSE (J P) *Cephalandra indica* **(Telakucha) in Diabetes.**—*Indian Jl Med Res* 1925 July Vol 13 No 1. pp 11–16 [3 refs]

Cephalandra indica (Sansk *vimba, tundkeri, tundika*, Hind *kunderi*, Beng *telakucha*), a creeping Cucurbitaceous herb that grows abundantly in a wild state in most parts of India, is reputed in Bengal to have a remarkable effect in reducing the amount of sugar in the urine of diabetics and has been used (fresh juice of leaves and tubers) for that purpose by Ayurvedists The authors have had the fresh juice analysed and have tested the enzyme, the hormone, and the traces of an alkaloid which it is found to contain The enzyme has amylolytic properties, but when administered subcutaneously to rabbits none of these substances reduces sugar, and the fresh juice causes no reduction of sugar in the blood or urine of patients suffering from glycosuria

A A

CHOPRA (R N) & GHOSH (Sudhamoy) **A Preliminary Note on the Pharmacology and Therapeutics of** *Adhatoda vasica* **(Basak).**—*Indian Med Gaz* 1925 Aug. Vol 60 No 8 pp 354–355 [4 refs]

—— & —— **Some Observations on the Pharmacological Action and Therapeutic Properties of** *Adhatoda vasica* **(Basak) (Indigenous Drug Series No. 6.)**—*Indian Jl Med Res* 1925 Oct Vol 13 No 2 pp 205–212 With 2 charts [2 refs]

Adhatoda vasica is a small evergreen bush of the N O Acanthaceae, which grows all over the plains of India and is extensively used as a remedy for colds, bronchitis and asthma The authors found in it two principles, an alkaloid "vasicine" and a volatile principle, the first of which had no marked action. A fluid extract prepared from the leaves had decided expectorant properties and relieved bronchial spasm ; it had no effect whatever in pulmonary tuberculosis.

A. G. B.

ANDERSON (G. V. W.). **Case of "Belladonna Poisoning" by the Seeds of** *Datura Conigera.—Kenya Med. Jl.* 1925. Oct. Vol. 2. No. 7. p. 213.

The symptoms, in a European child of five years, with no history that would lead to a diagnosis of poisoning, were vomiting followed by delirium, face scarlet, pupils dilated and fixed, mouth dry and speech hoarse, muscles tremulous; movements jerky, "typical aspect of acute delirium tremens in adults," pulse 110. Atropin poisoning was diagnosed. It was ascertained next day that the child had eaten part of a seed pod of *Datura conigera.*

A. G. B.

MARTIN (S. H.). **Five Cases of Atriplicism.**—*China Med. Jl.* 1925. Sept. Vol. 39. No. 9. pp. 808–809. With 2 text figs.

Five cases of poisoning by ingestion of *Atriplex serrata* (Chenopodiacae) are recorded from Kirin, Manchuria, in one of which sloughs formed on both hands. The symptoms do not differ from the text-book descriptions. The facial oedema is illustrated.

A. G. B.

RIGOLLET. Les méningites épidémiques en Afrique occidentale française. [**Epidemic Meningitis in French West Africa.**]—*Ann. de Méd et de Pharm. Colon.* 1925. May–June–July–Aug. Vol. 23 No. 2. pp. 279–289. [1 ref.]

Epidemic meningitis was identified in French West Africa (Senegal) for the first time in 1899 by MARCHOUX, but it had long been known to the natives. It takes different forms in different regions. Thus, in epidemics seen to the west of the Upper Niger it appears in the cold season, fastens on a village or group of villages, causing a mortality of about 1 per cent., and after some weeks, dies down ; but in the bend of the Niger, and to the east of that river, it is much more infectious, and is comparable with influenza ; the morbidity is greater, and the death roll may reach 10 or 15 per cent. In 4 years the Niger Colony has been the scene of meningitic outbreaks, interrupted at the rainy seasons, causing some 15,000 victims ; whereas in the same period in the upper Volta and Dahomey, the other side of the river, cases have been few.

There are two microbic agents, the pneumococcus and the meningococcus, and it is not possible to say which is the more important. In hospitals the meningococcus has the pre-eminence, but pneumonia is often present as well in these epidemics, which suggests that the pneumococcus is the cause of the meningitis also. Though the disease is not unknown in the warm, humid, coastal zones, the epidemic forms are almost entirely confined to the regions and the season where the fall of temperature is such as to produce chill. Cold, and dust raised by the dry wind of the cold season are important factors. A striking picture is given of the unhygienic conditions obtaining in a Lobi hut where at last even the tolerant inhabitant is driven out by the filth. Everything here favours spread. The means of checking these epidemics are discussed; they include the immobilization of the population attacked, isolation, naso-pharyngeal disinfection of contacts, incineration of huts or, failing that, the removal of the roofs, and the exposure to sun of the interior and the patient's property. Some illustrative case histories are given.

A. G. B.

BOLETIM GERAL DE MEDICINA E FARMACIA. (Supplemento.) 1924. 9th Ser. cxviii pp.—Numero Especial Referente a' Epidemia de Meningite do Concelho de Salcete. [**Meningitis in the Salcete District.**] [PINTO (Wiseman); DE MELLO (Froilano); LOBO (Gelásio J.)]

Amongst the cases on which this account is based there were certainly some instances of cerebrospinal fever, for the meningococcus was seen in the spinal fluid of six of them, but the recorded evidence that all, or even the majority, were cases of this disease is far from convincing. It is stated that 60 per cent. of the houses in one district suffered, that the majority of the patients got well spontaneously in 24–48 hours, or more rarely in 3 days; that fever was absent or very slight (99°–100°); while a few proved rapidly fatal in 2–3 days, but exhibited no rise of temperature. Most cases were very mild and probably many were unrecognized and unnotified. Besides the practical absence of fever other symptoms common in cerebrospinal fever were equally wanting. Thus, headache was anything but a marked feature, there being usually merely a "sense of weight"; spinal pain was very rare; Kernig's and Brudzinski's signs were not elicited; neither herpes nor purpuric rashes were seen; the spinal fluid when withdrawn was not purulent. So much for negative evidence. On the other hand, certain symptoms were found which are not usual in epidemic meningitis, such as a feeling of constriction and burning in the chest; general anaesthesia in severe cases; the presence of risus sardonicus; enlargement and tenderness of the liver.

Permission for autopsies was apparently difficult to obtain. Accounts of three only are given, and two of these were performed in the cemetery late at night by candle-light, so that one author states: "We were more like conspirators than pathologists." Post-mortem findings cannot be very dependable when work is done under such conditions, especially if some hours have elapsed since death took place.

H. Harold Scott.

HEINEMANN (H.). Einige Fragen der praktischen Syphilis und Tuberkulosediagnostik im tropischen Lande. (Zugleich 3. Mitteilung der Liquoruntersuchungen.) [**Practical Questions of Diagnosis of Syphilis and Tuberculosis in the Tropics. The Cerebrospinal Fluid.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. July 1. Vol. 29. No. 7. pp. 316–334. With 7 charts. [8 refs.]

SCHÜFFNER and KUENEN, reporting in 1909 on the health of the Senembah Plantations Company on the east coast of Sumatra, stated that the mortality per 10,000 had fallen from 600 in 1897 to 95 in 1908; in 1923 it fell further to 54. A table gives the figures for Chinese and for Javanese men and women for these and the intervening years. What were formerly described as the special diseases of the coolie—

cholera, dysentery, beriberi and ankylostomiasis—have now little influence on the mortality curve. The same is the case with malaria, plague, smallpox and rabies; the diseases causing the highest mortality are pneumonia, nearly 24 per cent. of deaths, and tuberculosis 11 per cent. The figures are influenced by the fact that the physically weaker coolies do not sign on for a second term, and the author, searching the hospital records between 1905 and 1923, finds that the chief medical cause of such invaliding was tuberculosis, which is recorded in no less than 25 per cent. of the cases, another 15 per cent. being due to leprosy. Tuberculosis, therefore, is a very serious cause of death and invalidity.

Syphilis also is of importance, though it figures little in the returns, especially syphilis of the organs of circulation, lung, liver and central nervous system. For the detection of cerebrospinal syphilis examination of the C.S.F. is essential, and here the author notes that lumbar puncture is well borne by the coolies [*cf.* this *Bulletin,* Vol. 21, p. 924]. While the absence of change in the fluid does not negative a diagnosis of syphilis a positive C S.F. Wassermann is demonstrative. The significance of the blood Wassermann is perplexed by the frequence of latent yaws among the Javanese and by malaria, the influence of which is seen in a series of curves, which show that the Wassermann is frequently positive during the fever or other manifestations, and becomes negative after. A series of tables give the author's Wassermann results in syphilis, yaws and malaria. Of 33 coolies discharged owing to cerebrospinal syphilis, 23 were Chinese and 10 Javanese, though the Javanese are the more numerous; neither tabes nor general paralysis has ever been seen in Javanese. In spite of sources of error the author considers the blood Wassermann to be of great importance, especially in Javanese coolies. He has found that chronic pneumonia is frequently the result of syphilis, and recovery cannot take place without antisyphilitic treatment. Syphilitic anaemia is not infrequent; the blood Wassermann is often negative and the spleen is slightly enlarged; antisyphilitic treatment cures the condition. In syphilitic aortitis the blood reaction is not always positive; here X-rays assist in diagnosis.

As to tuberculosis we need a reaction which detects only active disease. Reactions which have been devised for this purpose are discussed, and it is concluded X-rays give more information than all of them. Since he has made more use of them the author has diagnosed more cases of bone tuberculosis than before, and in lung tuberculosis information can be thus obtained not only of diagnostic value but helpful in prognosis.

A. G. B.

REMLINGER (P.). Sur un virus herpétique d'origine marocaine. **[A Herpetic Virus from Morocco.]**—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 623–624.

With fluid drawn from the vesicles of a case of herpes at Tangiers the author inoculated the brain of a rabbit which showed symptoms on the 4th day and died on the 6th. Other rabbits were similarly inoculated in turn, and all succumbed in 6 days or less with typical herpetic encephalitis. The author is maintaining and studying the virus which, he says, differs in no respect from the herpetic virus of Europe.

A. G. B.

AFFRE. Un cas de tétanos ombilical guéri. **[Case of Recovery from Umbilical Tetanus.]**—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. p. 678.

This is the second case of recovery among the 100 cases treated at the Maternité, Dakar. The child was brought 12 days after birth, and had been ill with anorexia 5 days. For 33 days it received daily 10 cc. of antitetanic serum and a little atropin. The author considers that the usual cause of death is starvation because the infant is unable to suck. This patient was fed with a spoon.

A. G. B.

STEUDEL (E.). Malaria und Tuberkulose. **[Malaria and Tuberculosis.]** —*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 391–393. [3 refs.]

The author believes that malaria furthers tuberculosis. Though affections of the respiratory ways are much rarer in Europeans in the tropics than in temperate climates, it is notorious that when they have commencing lung changes the advance is rapid. The change for the worse is due to malaria, and he recalls cases of tuberculosis in ex-German East Africa in which malaria was escaped and the lung lesions healed soundly. Another experience is of the War. In 1915–16 he was in medical charge of the 25th Corps on the eastern front, and since this front was relatively peaceful the regular troops were replaced by a Landsturm battalion, which contained a number of men who had suffered from tuberculosis Life in the open air and regular food suited them well till, in 1916, malaria appeared, upon which the old tubercular cases relapsed with pleurisy and catarrhal symptoms, from which the rest remained free. Unfortunately he is not able to report on the outcome. He refers also to the statement of Dr. ATKEY (Further Report on Tuberculosis and Sleeping Sickness in Equatorial Africa. League of Nations) that in the Sudan malaria predisposes to tuberculosis, and that measures undertaken against malaria have a favourable effect on the occurrence of the other disease. Steudel considers it not improbable that the malaria parasites produce blood changes which, possibly by destruction of antibodies of tuberculosis, directly favour that disease.

A. G. B.

DUNLAP (A. M.). **Peanut Bronchitis in China; with the Report of a Case.**—*China Med. Jl.* 1925. Oct. Vol. 39. No. 10. pp. 903–910. With 1 chart in text. [4 refs.]

This form of bronchitis was described in 1919 by PATTERSON in U.S.A. It is due to the inhalation of fragments of peanut and seems to have increased in prevalence with the substitution in the War of ground nuts for meat. Here we have an account of it in China. According to JACKSON (1914) peanuts are among the more fatal of foreign bodies in the air passages, owing to "the peculiar irritating effect of the peanut kernel upon the trachea-bronchial mucosa." This is said to be due to arachidic acid, "a saturated fatty acid which is present in about 5 per cent. strength in peanut oil." The symptoms resemble those of laryngeal diphtheria—asthmatic cough, toxaemia, fever; the physical signs are those of diffuse bronchitis with accentuation over the site of the foreign body. The patients are usually children under 7, and there is a history of peanut consumption, and possibly of choking. Unless the foreign body is removed there is grave danger of death. A long account is given of a case in a Chinese boy of 5 years, from whom a piece of peanut 1 × 0·8 cm. in size was removed by bronchoscopy after tracheotomy had failed to relieve the symptoms. JACKSON says that "peanut thresher's fever" is well-recognized where peanuts are grown.

A. G. B.

NEDERLANDSCH TIJDSCHRIFT VOOR GENEESKUNDE. 1925. Year 69. 2nd Half. No. 9. pp. 1079–1084.—Nederlandsche Vereeniging voor Tropische Geneeskunde. Vergadering op Zondag 10 Mei 1925. [**Dutch Society for Tropical Medicine. Meeting on Sunday, May 10th, 1925.**]

SNYDERS discusses the geographical distribution of rhinoscleroma, which is found not only in Europe but also in North and Central America, Brazil, North Africa and Bengal. He records 3 cases observed in Sumatra, 2 diagnosed by the pathological anatomical structure of the tissue (plasma cells, hyaline globules, Mikulicz-cells and capsule-enveloped bacteria), one also by the culture of the bacilli of FRISCH. He is of PALTAUF'S and MARSCHALKO'S opinion that the Mikulicz-cells are degenerated macrophages derived from the endothelium or connective tissue. FRISCH'S bacillus is not stained by Gram's method. Its pathogenicity and fermenting property is very small, compared with the other capsule-bearing bacilli of the same group, and the capsules in old cultures are much more distinct.

ELDERS has observed two cases of fever with a measles-like rash, leaving the face untouched (without preceding coryza, conjunctivitis or lymphadenitis) after the use of 250 mgm. stovarsol thrice a day.

N. H. Swellengrebel.

SNIJDERS (E. P.). Ueber einen tropischen Rhinoskleromherd auf Sumatra. [**A Focus of Rhinoscleroma in Sumatra.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 360–369. With 22 figs. on 4 plates. [26 refs.]

The author charts the geographical distribution of the disease, which seems to occur in well-definied foci. In Europe the chief is in the east—Poland, Chekoslovakia, etc., where some 480 cases have been reported; smaller foci occur in Italy and Switzerland. In the tropics it is found in Central America, between Mexico and Colombia, at least 50 cases described; in Brazil, 8 cases; in Egypt, an unstated number of cases described since 1886 (see MADDEN, in BYAM and ARCHIBALD'S "Practice of Medicine in the Tropics"); in Calcutta, 11 cases described; and now in Sumatra 4 cases. The face is characteristically changed in the later stages, leading to a tapir or hippopotamus-like appearance. The author compares the disease to venereal granuloma, and states that KABELIK has treated it with tartar emetic intravenously with success. Details are given of the microscopical characters.

A. G. B.

FRONVILLE. La rachi-anesthesie. Son application chez le noir. [**Spinal Anaesthesia in the Black Man.**]—*Bull. Méd. du Katanga.* 1925. June. Vol. 2. No. 3. pp. 116–118.

At Elizabethville spinal anaesthesia is now systematically employed in operations below the level of the navel, and the author, who is an advocate of the method, writes from experience of more than 300 cases. Serious accidents may occur, due to hypotension; therefore, this method is interdicted in cases complicated by shock, cachexia, or anaemia, and in acute stages of disease. Slight accidents due to hypotension are relieved by intravenous aqueous injections. One of the very earliest accidents at Elizabethville was the sudden death, two minutes after the injection of 6 cgm. of stovaine, of a patient suffering from a crushed leg and much loss of blood. Two deaths occurred, 2 days after operation, in two long-standing cachectic cases—one of gangrene of the foot, the other of osteitis of the entire tibia. A pneumonia lasting 2 or 3 days supervened in 3 or 4 cases. Paralysis of the bladder (which twice persisted for 5 days) happened in 12 cases, and is best relieved by manual pressure upon the bladder, since in one case that was catheterized the patient finally succumbed with cystitis and suppurative nephritis. A transitory intestinal paralysis occurred in 5 or 6 cases, causing a general and alarming inflation of the abdomen—particularly after injections of stovain. Vomiting and a tendency to syncope are sometimes observed at the commencement of anaesthesia; and civilized negroes sometimes complain of headache for a few days after operation. Fever up to 100° or 101° F., and lasting 2 days, is a very common occurrence; it is not due to kindling of a latent malaria.

In one case intra-rachitic injection did not take effect; in a few other cases it was insufficient, and had to be superseded by a general anaesthetic.

A. A.

ANTHONY (R. W.). **Certain Aspects of Litholapaxy.**—*Indian Med. Gaz.* 1925. July. Vol. 60. No. 7 pp 311–312

The author has done over 2,500 litholapaxies, mostly at Hyderabad in Sinde, where it has been the custom to allow the patient—as he prefers, if there are no complications—to go home when he has recovered from the anaesthetic. This paper deals merely with certain minor facilitations of the operation of litholapaxy.

In boys, after the bladder has been filled for operation reflux can be obviated by a rubber band round the base of the penis. In boys, too, the working of a lithotrite is often facilitated by preliminary distension of the urethra by graduated metal bougies And in boys an evacuator is not necessary, the bladder can be repeatedly washed out through a large cannula and with simple manual pressure.

The author never rotates the beak of a lithotrite in the bladder. If the lithotrite will not lock on a stone smart (and infinitely cautious) taps on the head of the instrument with a hammer will make an impression on anything but a large mulberry. Nowadays the author does suprapubic litholapaxy in about 1 per cent., and perineal litholapaxy in about 2 per cent. of cases.

A. A.

BHATIA (S. L.) & COELHO (G.). **Some Observations on Normal Sugar-Content of Blood and the Sugar Tolerance Test.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. pp. 41–51. [12 refs.]

These observations record the results of a series of experiments carried out to determine the normal sugar-content of the blood and normal sugar-tolerance of Indians living (*a*) on a purely vegetarian, and (*b*) on a mixed diet (The vegetarian diet includes milk and its products, and the mixed diet of Indians is bulky in carbohydrates) The subjects of experiment consisted of 18 "vegetarians" and 20 "non-vegetarians" The order and technical methods of the experiments are fully and carefully described, as also are details of results

The results show a marked difference between vegetarians and non-vegetarians In vegetarians sugar-tolerance is lower, the blood-sugar level is higher initially, and after ingestion of sugar it reaches a higher level and readily passes beyond the renal threshold for sugar, so that glycuresis is common It is argued from these results that since the normal person does not possess complete tolerance for carbohydrates, as was hitherto believed, the individual who subsists on a diet over-rich in carbohydrates is dangerously near the boundary-line of diabetes The observations help to account for the frequency of glycosuria in India Vegetarians, like herbivorous animals such as rabbits, seem to be specially susceptible to extreme variations in the amount of blood-sugar, and in vegetarians, as in the rabbit, sudden emotional disturbances tend to cause hyperglycaemia and consequent glycuresis The authors attribute the diminished sugar-tolerance of vegetarians to two possible causes—deficiency of the function of the liver and overstrain and exhaustion of the islands of Langerhans—acting separately or conjointly

A A

BRAHMACHARI (Upendra Nath) & SEN (Parimal Bikash) **Researches on Blood-Sugar in Indians. Part I. Blood-Sugar Observations in Young People of Bengal.**—*Indian Jl Med Res* 1925 Oct Vol 13 No 2 pp 271–274

Diabetes being common in Bengal, observations on sugar tolerance were made on unselected students (*aet* 19–26), with the result that defective tolerance is found in many, and there is a wider variation (0 075–0 135 per cent) in initial sugar content of the blood after 10 hours inanition, than in Europeans Maclean's method was used Among 47 cases, only one showed a return to the original level, 1 hour after taking 50 gm of sugar, 29 in 1½ hours, and 12 in 2 hours Five were deficient in sugar tolerance *i e*, 10 per cent were potentially diabetic Of the 47, 8 were vegetarians (1 potential diabetic), the remaining 39 were on a mixed diet (4 potential diabetics) Observations on "Kidney threshold" were limited in number (15) Out of 7 cases in which the blood-sugar rose above 0 18 per cent no sugar was detected in the urine in one

W D Halliburton

HUGHES (T A) **Effects of Quinine on the Sugar of the Blood.**—*Indian Jl Med Res* 1925 Oct Vol 13 No 2 pp 321–336 [22 refs]

Quinine is glycogenolytic in rabbits and leads to hyperglycaemia The part played by the adrenal in the process seems uncertain, therefore certain drugs known to affect that gland were used in these observations on rabbits and men, in rabbits insulin produces the same effect on quinine hyperglycaemia as on adrenaline hyperglycaemia Ergotoxine and to a less degree pituitrin also inhibit quinine glycogenesis Quinine in antimalarial doses usually lowers the blood sugar in man, and this is antagonized by pituitrin. The fall so produced may give rise to mild symptoms of hypoglycaemia, which may be prevented by a carbohydrate meal 30–60 minutes before the drug is taken.

W. D. Halliburton.

BEVEN (J. O.). **A Case of Hypernephroma.**—*Kenya Med. Jl.* 1925. July. Vol. 2. No. 4. p. 120.

The patient, a Jaluo boy of 14, came much emaciated, with a much distended belly, and a story of 3 months' fever. The distension was on the left side and exactly simulated an enlarged spleen, and as benign tertian gametocytes were found in considerable number the case was diagnosed as "advanced malarial cachexia with splenitis." As he died three weeks after admission, in spite of treatment and good diet, a post-mortem examination was made, and the entire left half of the abdomen was found filled by an enormous tumour which, though its shape and surface relations exactly resembled a greatly enlarged spleen, "involved the liver, diaphragm, stomach, pancreas, spleen, all three parts of the small intestine, the transverse and descending colon, bladder, rectum, and left kidney." The author believes the tumour to have been a hypernephroma: it was removed *en bloc* and placed in formalin, but in the author's absence it was condemned, and had to be disposed of without further examination

A A.

NICOLLE (Pierre). Méthode pour l'étude expérimentale des antithermiques. Essai pharmacodynamique. [**Method for the Experimental Study of Antipyretics: Pharmacodynamic Trial.**]—*Arch. Inst. Pasteur de Tunis.* 1925. July. Vol. 14. No. 3. pp. 325–330. With 4 charts in text.

After discussing various means of producing in laboratory animals a phase of hyperthermia so constant in all its measurements as to afford a standard for the comparative study of the effect of different antipyretics, the author describes a method of producing in the rabbit a fever-curve having the necessary constancy. This method consists in the intravenous injection of a definite quantity of a maceration (filtered and sterilized) of brewers' yeast. In the experiments here briefly described the intravenous injection of 10 cc. of this yeast filtrate constantly produced in the rabbit a rise of temperature lasting 7 hours and attaining a maximum, in 3¼ hours, of 2·3° above the norm. Experiments are also described showing the effects upon this standard curve of the supervention of given quantities, respectively, of antipyrin, phenacetin, and a new unspecified antipyretic preparation. [The results, as regards the known drugs, are in harmony with general experience.]

A. A.

JARLAND. L'opium au Yunnan, ses conséquences sociales. [**Social Results of Opium Smoking in Yunnan.**]—*Ann. de Méd. et de Pharm. Colon.* 1925. Jan.–Feb.–Mar.–Apr. Vol. 23. No. 1. pp. 54–65.

We have here a perfectly hideous picture—almost as horrible as the young Claudio's vision of death—of the opium-smokers of the opium-growing Chinese Province of Yunnan. The author classifies his horrors. First the opium-smokers of the ruling class, of whom it is said that, but for a brief repast and an hour of work, their waking-hours "are devoted to smoking, with interludes of gambling and chambering." The younger members of this upper class take, perhaps, 7 to 12 pipes a day, and are merely more expansive and loquacious and visionary and impulsive than is generally natural to youth. In middle age, when they come to 15 to 40 pipes a day, they are more visionary, loquacious to the verge of inarticulation, and in thought and judgment are perfect monsters of cynical inhumanity. In old age (over 40 years) they get to 40 to 100 pipes a day: their nerve-centres are now " staked away to torpor"; the sensible warm motion has become a mere parchment shape, with a face of yellow wax. The smokers of the middle classes are for the most part dealers in opium and therefore have to keep their wits about them ; they have less leisure for smoking and seldom come to the last stage of utter wreck. The lower classes take their opium in immoderate doses, for the sake of temporary excitement, and under its influence they become morbidly cruel and merciless.

The author sums up the opium-smoker as a pariah to be banned by society and deprived of all authority over sentient creatures. As regards remedies : in the statement that the one and only commodity that Yunnan produces for the world's markets is opium, the author gives us an extreme and desperate instance of an old and familiar obstacle in the reformer's path.

A. A.

DESTÉFANO (Francisco) & VACCAREZZA (Raúl F.). Tratamiento de la poradenitis inguinal por las sales de antimonio. [**Treatment of Inguinal "Poradenitis" by Salts of Antimony.**]—*Semana Médica.* 1925. Oct. 22. Vol. 32. No. 43 (1658). pp. 1013–1052. With 5 charts in text. [12 refs.]

The first part of this article is occupied by a brief review of the various forms of treatment of inguinal adenitis (climatic venereal bubo), surgical by excision, medicinal by mercurial salts, iodide of potassium, iron, arsenic, emetine and other preparations, and physical by radiotherapy. The authors then give an account of a method they have employed in 72 cases, the intravenous injection of antimony. 38 were in the indurative stage, 28 suppurating, and 6 fistulous. A 1 per cent. solution of tartar emetic in saline was used ; the first injection was 5 cc., two or three days later 8 cc., and thereafter 10 cc. every three or four days. Of those in the stage of induration 27 were cured in periods varying between a week and a month, 9 ceased treatment when nearly well, one left after 5 days, and one was still attending. Of the 28 in the suppurating condition in 15 the glands completely receded, 4 did not go through a complete course ; in the remaining 9 the abscess opened spontaneously or was opened surgically. Six cases had fistulae ; three of these were cured in approximately 2 months, the other three had made great improvement when they ceased to attend.

In the majority of cases 4–8 injections were required ; some had 15, only six needing more than this. The only contra-indication to the use of the drug is, according to the authors, renal mischief, especially acute parenchymatous nephritis. The last portion of the paper is given up to a description of each of the 72 cases.

H. Harold Scott.

CAPPER (A.). **An Epitome of the History of Syphilis.**—*Arch. Dermat. & Syph.* 1925. Vol. 12. No. 4. pp. 509–519. [5 refs.]

The question whether syphilis existed in the Old World prior to the latter part of the 15th century has again been examined by the author, who concludes that the weight of evidence seems to favour the view that syphilis was previously unknown in the Old World, except perhaps in Eastern Asia. In ancient Egyptian remains LORTET and CAILLARD have reported lesions of syphilis (irregular erosions in the outer table of the frontal and parietal bones), but against this solitary finding is the failure of RUFFER and MOODIE to find any evidence of syphilis in mummies of the period 1580 B.C. to 520 B.C., and from 500 B.C. The evidence from China is contained in GARDY'S " Medicine of the Chinese," a compilation of Chinese medical works dating back to 1700 B.C. The descriptions of lesions in this work " are so perfect that no doubt is left in one's mind after reading these that they were of a syphilitic nature." TURNBULL discards the evidence that the boils of Job and the nocturnal bone pains of David were syphilitic on the grounds that David was a poet and spoke allegorically, and that Josephus makes no mention of the disease. As to the Romans, CELSIUS, AERETIUS & AETIUS have described lesions which read like chancres, secondary syphilitic lesions and tertiary manifestations including profound pains in the bones. Turning to America, .we at once get evidence, in prehistoric bones, of the existence of syphilis in the New World long before the time of COLOMBUS. BRUEHL says that the Mexicans understood syphilis so well that they were able to instruct the Spaniards in its management. The author is rather opposed to the argument that syphilis was imported into Europe by the crew of Christopher Columbus's vessel. These 82 sailors, with nine Indians, landed at Palos, Portugal on March 13th, 1493. They remained in their country until 1495. The crews of the remaining vessels of the Columbus expedition, under Pinzen, landed at Bayonne in March, 1493. ROY DIAZ DE LALA states that he treated some of Columbus's crew for syphilis on the voyage home. The great outbreak of syphilis in Europe is commonly believed to have started at Naples in the army of Charles VIII of France, who entered this city on February 21st, 1594. Capper thinks it hardly conceivable that so few men as those constituting the crews of Columbus's vessel could have originated such a wide-spread epidemic. [As to this, the reader will probably agree that disease starting from even so few as 91 men could spread very rapidly on a virgin soil, and it is inconceivable that, if the men of Columbus's vessel were infected, Pinzen's crews had escaped.] There is the statement of FULGOSE that syphilis prevailed sporadically in 1492, and SPRENGEL said that in the beginning of the summer of 1493 the new disease was in Auvergne and in Lombardy. A little later it was manifest in Halle, Brunswick and Mecklenburg. The author can hardly believe that, considering the slowness of travel in those days, the disease could have reached all these places so quickly from such a small focus as the Columbus expeditioners.

L. W. Harrison.

KIMURA (Hiroshi). **On the Treatments of Elephantiasis.**—*Japan Med World.* 1925. Aug. 15. Vol. 5. No. 8. pp. 201–211. With 12 text figs. [47 refs.]

A somewhat lengthy paper in which the author reviews the various forms of treatment, operative and non-operative, hitherto devised and practised for the relief of elephantiasis, and advances a new method of securing lymphatic drainage and consequent amelioration of symptoms.

In agreement with other observers he regards non-operative treatment as invariably unsatisfactory, but holds elastic bandaging to be useful both before operation as a preparatory measure, and after operation as an aid to the prevention of recurrence. Lymphangioplasty and other operative procedures entailing the insertion of foreign bodies in the tissues are rightly condemned as affording at the best a period of only temporary relief, limited usually to the duration of the patient's confinement to bed. Of the different methods aiming at drainage of the affected parts by the establishment of free communication with the deeper lymphatics KONDOLEON's is recognized as more or less effective.

The new surgical departure which the writer brings to notice consists in the fashioning of pedunculated skin and subcutaneous tissue flaps from adjoining normal structures, and their plantation in the affected parts at spots where corresponding patches of elephantoid integument have been removed. For instance, in a case of elephantiasis of the lower extremity a flap is cut from the skin of the lower abdomen or buttock and planted in the thigh When the leg alone is affected flaps from the lower part of the front or sides of the thigh are utilized. Similarly, in the case of the scrotum or penis, the healthy skin of the abdomen and front of the thighs is drawn upon. The author attempts to drain stagnated lymph into superficial tissues, whereas KONDOLEON's aim is to drain it into deeper channels by removal of strips of fascia In elephantiasis of the genitalia the new method plus some removal of tissue is held to give the best results. In the lower extremity a combination of these two procedures with KONDOLEON's operation is recommended. Details are given of a series of cases which in nearly every instance tend to show a satisfactory degree of resultant improvement.

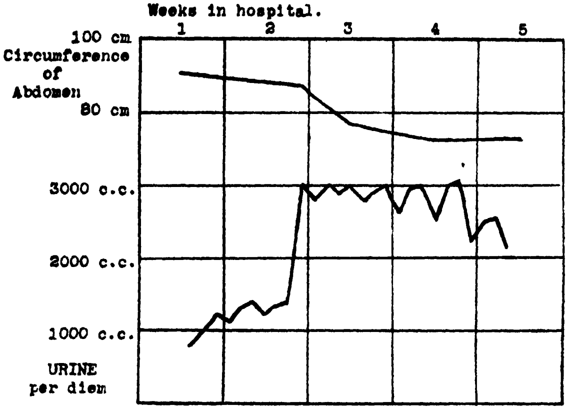
J. J. Pratt.

DAY (H B). **The Relation of Nephritis in Egypt to Intestinal Infection.** —*Lancet.* 1925. Oct. 24. pp. 860–864. With 5 charts in text [7 refs.]

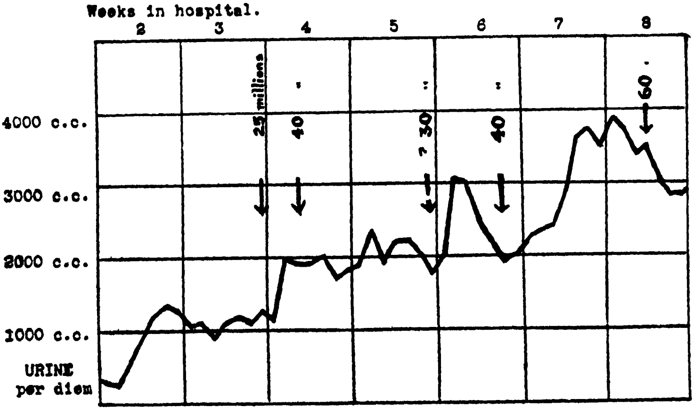
The author has analysed some 100 cases of nephritis with oedema admitted to the wards of the Kasr-el-Ainy Hospital, Cairo. He classes 34 as acute (abundant blood casts or cellular casts in the urine), 5 as syphilitic, and the remaining 61 as chronic. Of 27 acute cases no less than 20 had been incapacitated by definite illness for some time before the renal symptoms appeared, fever or diarrhoea or both, and in no instance could the fever be identified as scarlatina. In 55 per cent. of the acute cases there were definite signs of *Bilharzia mansoni* infection, a much higher proportion than in ordinary hospital patients, and 33 per cent. were infected with *B. haematobia*, but this incidence is too low to be significant ; however, the frequent implication of the ureters undoubtedly disposes to renal infection. In the *B. mansoni* form the nephritis appears when the ova breach the intestinal mucosa. Ancylostomiasis was frequently associated with nephritis.

In the acute nephritic cases bacteriological examination of the catheter urine almost always gave positive results, and cultivation a pure growth of bacilli of intestinal types ; coliform organisms from this source reproduced nephritis in a series of animals inoculated subcutaneously or by the peritoneum.

Cases were treated on the assumption that the nephritis resulted from an intestinal affection: some forms responded to emetine injections, others to treatment for ancylostomiasis, others again to vaccines (see charts). The dose of vaccines should be inversely proportional to



Case of ankylostomiasis complicated by nephritis with general oedema and ascites for four months Anthelmintic treatment caused a gradual improvement with a sudden diuresis as soon as all the worms were expelled



Case of prolonged dysentery with fever (due to *Bilharzia mansoni* infection) complicated with nephritis. On admission there was much oedema and oliguria The chart shows some diuresis in the second week following the administration of urea. An autogenous vaccine was afterwards given by injection as indicated in the chart. Emetine was given during the third, fourth, and fifth weeks. The fever and dysentery declined in the sixth week By the eighth week the albumin had decreased to a trace; the diuresis continued for another month.

[Reproduced by permission from the *Lancet.*]

the severity of the renal symptoms; correctness of dosage is important. In some chronic cases in which bacilli could not be found in the urine a stock vaccine was useful. [In the Philippines, Panama, and the West Indies nephritis is believed to be a not infrequent complication or sequel of malaria.]

A. G. B.

PANJA (Ganapati). **A Case of Malignant Pustule.**—*Indian Med. Gaz.* 1925. Sept. Vol. 60. No. 9. p. 428. With 1 text fig.

A Mohammedan came to the out-patient department of the Calcutta School of Tropical Medicine with a localized swelling on the front of the left upper arm near the axilla, oval, 1½ inches long, consisting of several vesicles with a depressed central scab from which strings of swollen lymphatics radiated; he did not appear very ill. Cultures showed *B. anthracis* The man had worked as a hide bearer. Anthrax, we are told, is rarely seen at Calcutta.

A. G. B.

KHAREGAB (R.). **Quinine in Pneumonia.** [Correspondence.]—*Lancet.* 1925. Sept. 19. p. 626.

The writer, who is Agency Surgeon at Wano, N.W.F. Province, has treated his pneumonia cases with intravenous injections of quinine bihydrochloride with benefit. As soon as the diagnosis is made 7 gr. are given in 10 cc. distilled water, and repeated on the 3rd and the 5th day. It does not shorten the course of the disease nor expedite the crisis. The mortality, however, among 92 cases was 6·5 per cent., and in another series (severe cases) 15 per cent., whereas in a series of cases not so treated it was 25 per cent. [The figures which form the basis of these percentages are not given.] There had been a high incidence of malaria in the summer, but parasites were not detected in blood smears from these patients; it is, however, stated that chronic malarials did less well than others.

A. G. B.

LOTTI (C.) & MANAI (A.). Ricerche sul favismo. [**Researches in Favism.**]—*Sperimentale.* 1925. Oct. 17. Vol. 79. No. 5. pp. 791–846. [30 refs.]

Favismus is the term applied to the symptoms produced by inhalation of the scent of the flowers or ingestion of the fresh fruits of certain leguminous cereals, and is a condition affecting 5·17 per mille of the inhabitants of Southern Italy and Sardinia in particular, terminating fatally in approximately 8 per cent. of cases with rapid respiration, tremors, convulsions and, perhaps, haemoglobinuria.

Several series of experiments were carried out with the dried flowers, the juice and other extracts to determine how these symptoms were brought about. Extracts of the dried plant injected intravenously into rabbits produced active haemolysis and haemoglobinuria and death in a few hours. The juice of the flowers led to death in convulsions, but without any haemoglobinuria. Fairly precise details are given of 62 experimental investigations performed.

The serum of patients already attacked by favismus, who give a positive cutireaction to antigens prepared from extracts of the plant, can passively convey the hypersensitiveness to rabbits, and the injection into these animals of the inactivated serum of patients with haemoglobinuria due to favismus will reproduce the same condition.

H. Harold Scott.

Weiss (Pedro) Puede asegurarse que existe un tipo blastomicósico de espundia? [**Is there a Blastomycotic Type of Espundia?**]—*Cronica Med* Lima 1925 May. Vol 42 No 743 pp. 144–148

This brief article should, and probably will, lead to further discussion The author notes that several diseases in tropical regions are associated with the presence of fungi and deplores the tendency to regard these on insufficient evidence as aetiological This is his main thesis, and its particular application is made to leishmaniasis (espundia) The geographical distribution of blastomycosis and leishmaniasis in Peru is the same; Escomel's "clasmatocyte of blastomycoma," regarded by that author as diagnostic of blastomycosis, is probably nothing else than an ordinary plasma cell and common to many conditions Further, all the symptoms believed to be diagnostic of blastomycosis have been observed by the author in cases of leishmaniasis, so that it is highly probable that a blastomycotic form of espundia is a true leishmania infection to which some fungus has gained access, and is not a separate entity

H Harold Scott

Collier (Werner Adalbert) & **Evers** (Elsa) Untersuchungen ueber die Heil- und Schutzwirkung des Stovarsols bei experimenteller Kaninchensyphilis und bei Trypanosomeninfektion der Kaninchen [**The Curative and Protective Action of Stovarsol in Experimental Syphilis and Trypanosomiasis of the Rabbit.**]—*Dermat Ztschr* 1925 May Vol 44 No 1 pp 1–16 [21 refs]

In the authors' experiments on rabbits the preparation proved so toxic that even the seventh part of the dose recommended by Levaditi could not be borne by all the animals To obtain cure of syphilis a dose close to the toxic had to be given In intracutaneous infection with trypanosomes typical trypanosomal chancres" developed in spite of the prophylactic injection of stovarsol and with the ordinary method of introduction of the parasites the drug was equally useless in either prevention or cure Fourneau's conclusion that stovarsol is of little value in trypanosomiasis was confirmed.

A G B

Fronville (G) Les occlusions intestinales [**Intestinal Obstruction.**] —*Bull Méd du Katanga* 1925 Aug Vol 2 No 4 pp. 156–160.

Cases of intestinal obstruction seen in natives at Elizabethville: Imperforate anus in infants, 2 cases Strangulated hernia, common in the male, 12 cases Ileocaecal invagination, one case, easy reduction at operation followed by death, bilharzial dysentery present Iliac volvulus, 2 cases Peritonitis, several cases in females secondary to gonorrheal infection, other cases due to typhoid

A G B

FRONVILLE (G). Les pleuresies purulentes chez le noir. [**Purulent Pleurisy in the Black Man.**]—*Bull Méd du Katanga* 1925 Aug Vol 2 No 4 pp 167–168

Empyema occurs in the negro as a complication of pneumonia or influenza There is fever with daily remissions, and nearly always oedema along the vertebral column, and sometimes behind on the affected side These collections of pus are often localized The author has operated on 13 cases with 3 deaths The anaesthesia should be purely local and two ribs should be resected as low down as possible

A G B

VAN NITSEN (R) Deux observations d abces de la rate [**Two Cases of Splenic Abscess.**]—*Bull Med du Katanga* 1925 Aug Vol 2 No 4 pp 168–169

A patient admitted with pneumonia showed slight jaundice on the 4th day with moderate hepatic and greater splenic enlargement, some toes became gangrenous and death occurred 12 days later At autopsy the spleen weighed 590 gm and presented an orange-sized abscess under the capsule which adhered lightly to the diaphragm The reddish-brown contents contained diplococci, probably pneumococci, and large sporulating bacilli The second case of splenic abscess was one of typhoid complicated by tuberculosis, in which the patient was not seen alive

A G B

MCROBERT (G R) **Some Points in the Treatment of Typhus Fever.**—*Indian Med Gaz.* 1925 July Vol 60 No 7 pp 318–321 [1 ref]

The measures advised are based on the study of some 300 cases of typhus among European and Indian soldiers in Mesopotamia where the author found that much can be done to lower the case mortality by active therapeusis The chief measures were, rigorous attention to the amount of sleep obtained in the earlier stages, secured by morphine and atropine the combating of the profound toxaemia by normal saline intravenously in severe cases, treatment of severe headache by lumbar puncture, and the prevention of venous thrombosis by intravenous infusion of sodium citrate solution These are the chief points of an interesting practical paper

A G B

CASTELLANI (Aldo) **Notes on Non-Gonorrhoeal Urethrites.**—*Jl Trop Med & Hyg* 1925 July 1 Vol 28 No 13 pp 250–252

The author distinguishes 4 forms of urethritis—traumatic (rare, in soldiers and porters doing long marches), associated with protozoa (spirochaetal, treponemal, etc), associated with metazoa (larvae, etc), and mycotic The mycotic cases he arranges botanically under 7 heads and clinically under 3, according to whether the discharge is white or yellowish, red, or black Here again the fungi in question are briefly discussed, and illustrative cases are given Irrigation with perchloride of mercury, 1 in 20,000, seems to cure all these cases.

A. G. B.

HOFFMANN (W. H.). Alastrim und Pocken. **[Alastrim and Smallpox.]** —*Deut. Med. Woch.* 1925. July 10. Vol. 51. No. 28. pp. 1154–1156. With 1 text fig. [1 ref.]

The author studied an epidemic of alastrim in Cuba in 1920–22; from some of the earliest patients the corneal inoculation of rabbits was practised and the cases declared to be true smallpox. All the measures customary in that disease were taken, especially the complete isolation of the infected and vaccination of all contacts, and the epidemic was brought to an end. The designation of alastrim was never employed; even in the notifications the word smallpox was used without qualification, and the author considers this to be of importance. He describes his observations on the blood of the patients (this *Bulletin*, Vol. 21, p. 332), and gives an account of the case of a medical colleague which at first suggested influenza. All the cases were segregated for 40 days.

A. G. B.

ALESSANDRINI (Alessandro). Sulla patogenesi del tifo murino. **[The Pathogeny of Rat Typhoid.]**—*Ann. d'Igiene.* 1925. June–July. Vol. 35. Nos. 6–7. p. 558–577. [23 refs.]

By means of several series of experiments, ingeniously devised and carefully performed [for details of which the original must be consulted], the author confirms with the Danysz bacillus the results obtained by SANARELLI relative to the mode of invasion of organisms of the typhoid and cholera group. It is shown that the bacillus cannot, even when taken in large amounts by mouth, survive the action of the gastric juice; that it reaches the duodenum and small intestine by the bloodstream, gaining entrance thereto viâ the buccal and pharyngeal mucosa.

Intraperitoneal inoculation of large doses kills within a few hours; in smaller doses in 2–3 days; in each case the blood invasion precedes the intestinal. Subcutaneous and subconjunctival inoculation are similarly effective by way of the circulation. The result of all the experiments is, therefore, that the enteritis due to the bacillus of Danysz cannot arise by the intestinal route direct under natural conditions.

H. Harold Scott.

DUPUY. Topophylaxie quinine. **[Quinine Topophylaxis.]**—*Bull. Méd. du Katanga.* 1925. June. Vol. 2. No. 3. pp. 112–113.

Topophylaxis in cases of quinine anaphylaxis or intolerance is thus carried out by the author :—

First day, intravenous injection of 2–3 drops of a 10 per cent. solution of "quinine" in the vein of the fore-arm A constricting band, removed after 5 minutes, prevents its reaching the general circulation. 15 minutes later, injection of 20 cgm. quinine in the buttock

Second day, same intravenous injection, followed in 15 minutes by 40 cgm. in the buttock.

Third day, same intravenous injection, followed in 15 minutes by 60cgm. in the buttock.

Fourth day, 3 cgm. per os, and 15 minutes later 25 cgm.

Fifth day, 2 cgm. per os, and 15 minutes later 32 cgm.

Seven cases were thus treated with success.

A. G. B.

YOUNG (W. A). **A Large Vesical Calculus.** [Letters and Answers]—*Brit. Med. Jl.* 1925. Oct. 31. p. 822.

This mixed phosphatic calculus, found in the bladder of a native who died in the Accra Hospital, weighed over 4 oz (131 grams) , there were no signs of schistosomiasis

A G B.

i. DESNOES (P H) **Seasickness.**—*Thirteenth Ann Rep Med Dept United Fruit Company, Boston, Mass , 1924* pp 224–235 [35 refs]

ii. JACKSON (M) **Elephantiasis of the Breast.** [Memoranda]—*Brit Med Jl* 1925 Oct 3 p 609 With 1 text fig

iii KING (H H) **A Summary of Recent Work on Lobar Pneumonia.**—*Indian Med Gaz* 1924 Dec Vol 59 No 12 pp 607–614. [81 refs]

iv MASON (E L) **Failures and Successes in the Care of Indian Children.**—*Jl Assoc Med Women in India* 1925 Feb. Vol 13 No 1. pp 19–22

v MURISON (C C) **“ Diagnosis ” in Hospitals.**—*Indian Med Gaz* 1925 Sept Vol 60 No 9 pp 407–415

vi WALLINGTON (K T K) **Two Examples of Lesions thought to be Rare in Natives.**—*Kenya Med Jl* 1925. May. Vol 2. No 2. pp 49–50

i An excellent article in which the causes and treatment are fully discussed

ii Female patient of the Mendi tribe in Sierra Leone Weight of tumour after removal, 40 lb

iii A valuable summary which must be consulted in the *I M G*

iv A practical paper full of detail by the Sister in Charge of the Children's Ward, Ludhiana Hospital

v A discourse on the best means of keeping hospital records, illustrated by examples It cannot be summarized

vi Aneurism of the thoracic aorta with rupture into the left pleural cavity and aortic valvular disease with death from cardiac failure

A. G B.

AZURDIA (Jose) Observations on some Tropical Diseases, and Measures recommended to prevent them in Future —*Proc Internat Conference on Health Problems in Trop America* 1924 pp 979–985 [United Fruit Company, Boston, Mass]

BLACKLOCK (D B) Endemic Goitre and Schistosomiasis in Sierra Leone —*Trans Roy Soc Trop Med & Hyg* 1925 Feb 19 Vol 18 No 8 pp 395–416 With 5 figs on 2 plates & 1 text fig [64 refs]

EGUCHI (Ch) Versuche ueber Infektion und Immunisierung per os an jungen und alten Mäusen und Meerschweinchen mit Rotlauf, Mäusetyphus Typhus und Ruhr —*Ztschr f Hyg u Infektionskr* 1925 Aug 19 Vol 105 No 1 pp 91–97 [7 refs]

GUAZON (Potenciano) Splenectomy in Twenty-One Cases of Splenomegaly: Technic and Observations —*Jl Philippine Islands Med Assoc* 1925 Oct Vol 5 No 10 pp 289–293

HAUER (A) Das seelische Moment als hygienischer Faktor Eine Betrachtung ueber den Feldzug in Deutsch-Ostafrika —*Beihefte z Arch f Schiffs- u. Trop -Hyg* 1925 Vol 29 No 1 pp 155–159

KATSUNUMA (S) Nouvelles recherches sur l'etiologie de quelques maladies au Japon —*Bruxelles Méd* 1924 Dec 28 Vol 5 No 9 pp 308–311

DE LANGEN (C D) De chemische samenstelling der Indische galsteenen en haar diagnostische herkenning door Röntgenstralen. [The Chemical Composition of Gall Stones in the Dutch East Indies and their Diagnosis by Means of Röntgen Rays]—*Geneesk Tijdschr v Nederl -Indië* 1925 Vol 65 No 1 pp 90–102 With 9 plates [See this *Bulletin* Vol 22 p 68]

LANGERON (Jean) Etude sur la pneumonie 1 Discussion de la valeur des groupes de pneumocoques au point de vue de l immunologie —*Bull. Méd du Katanga* 1924 Oct Vol 1 No 5 pp 194–197

LECLERC (Henri) Les plantes medicinales des colonies françaises Le Papayer —*Presse Méd* 1925 Feb 11 Vol 33 No 12 pp 196–197 With 1 fig [11 refs]

MALLORY (Frank B) Pathology in the Tropics —*Proc Internat Conference on Health Problems in Trop America* 1924 pp 911–913 [United Fruit Company Boston, Mass]

MARTIN (Franklin H) The Gorgas Memorial Institute of Tropical and Preventive Medicine —*Milit Surgeon* 1925 Dec Vol 57 No 6. pp 610–612

MONTILLA (Luis Eduardo) Algo sobre el diagnostico y tratamiento de las parasitosis intestinales y de la úlcera fagedenica de los paises calidos —*Rev Med y Cirug* Caracas 1924 Dec 31 Year 8 No 81 pp 32–36 (Discussion pp 36–41)

MULLER (Reiner) Sobre higiene de los Indios Inmunidad contra la infeccion y resistencia innata —Reprinted from *Medicina* 1925 Vol 2 No 7 pp 505–513

PARK (William H) The Injection of Serum or Plasma from Convalescent Cases of Measles, to prevent the Development of the Disease in Children —*Proc Internat Conference on Health Problems in Trop America* 1924 pp 908–910 [United Fruit Company, Boston Mass]

PHELPS (B M) Splenectomy with Report of a Case —*Ibid* pp 635–640 [7 refs]

POPE (Wm J) & HAINES (R T M) Colloidal Kaolin I Some Properties of Colloidal Kaolin —*Lancet* 1925 May 30 pp 1123–1124 [1 ref]

EYRE (John W H) II The Absorption of Toxin by Kaolin —*Ibid* pp. 1124–1125 [1 ref]

RATH (H) Les Indes neerlandaises de l'Est —*Presse Méd* 1925 Dec 19. Vol 33 No 101 pp 1675–1679 With 16 text figs

STRONG (Richard P) The Development of Pathogenicity and Parasitism in Saprophytic Microorganisms through changed Environment —*Proc Internat. Conference on Health Problems in Trop America* 1924 pp 914–939. [65 refs] [United Fruit Company, Boston, Mass]

SYLVAIN (Normil Georges) Haiti et la Médecine haïtienne —*Presse Med* 1925. Feb 25 Vol 33 No 16 pp 257–260 With 6 text figs & 1 map

VASSAL (Joseph) Une mutilation des organes génitaux des femmes noires "banda" Le Ganza —*Ibid* Sept 23 No 76 pp 1275–1278 With 10 text figs

VINCENT (George E) Tropical Hygiene an International Adventure —*Proc. Internat Conference on Health Problems in Trop America* 1924 pp 6–16. [United Fruit Company, Boston, Mass]

YAKIMOFF (W L), IOUKOWSKY (A) & SCHIRWIND (S L) Au sujet de l'angine de Vincent —*Bull Soc Path Exot* 1925 Apr 8 Vol 18 No 4. pp 304–305. [1 ref]

REVIEWS AND NOTICES.

KIRKPATRICK (Henry). [M.B., Lt-Col., I.M.S (ret.), Late Professor of Pathology and of Ophthalmology, Med College, Madras; Late Supt. of Govt. Ophthalmic Hospital, Madras.] **Diseases of the Eye. A Manual for the Practitioner.**—pp. ix+132. With 28 figs. 1925. Calcutta: Butterworth & Co. (India), Ltd., 6, Hastings Street. Medical Publishers. [Price 10s. 6d. net]

This book is avowedly written for the general practitioner, especially for one practising in remote parts, with a view to helping him to treat those eye cases with which he meets in his daily work Running all through it is the main idea of the interplay between vitiated constitutional conditions and manifestations of eye disease The general practitioner in Eastern lands has opportunities for observing and studying the eye symptoms of many diseases of which we now know all too little The ophthalmic surgeon does not see the tropical patient in the acute stage of his illness, and the general practitioner is unfortunately not only hard pressed to get his day's work finished, but is also only too often handicapped by a diffidence in taking up the study of eye symptoms, from an altogether mistaken belief that they are too intricate and obscure for there to be any hope of his understanding them The present volume will do much to dispel such ideas, it is very readable, clearly expressed and thoroughly sound Moreover, it comes from the pen of a man with large and wide experience of tropical as well as of ordinary disease The author has known how to add to knowledge experience and to experience wisdom Nor is it alone to the tropical practitioner that the book will make a strong appeal The Great War has flung an aftermath of tropical disease across Britain and her Colonies, and the man who now practises medicine in the United Kingdom, in Canada, New Zealand, S Africa and elsewhere must be prepared to meet in his daily work with cases across which lies the stain of tropical disease To such this book will be helpful, but its usefulness will probably be wider still in teaching its reader to learn the daily lessons that a study of the eye has so often to unfold for the enlightenment of the observant physician "To him that hath shall more be added" is a rule that holds in no department of knowledge more than in medicine, and this small and inexpensive volume can be confidently recommended to all who are interested in improving their professional knowledge It will open up a fresh field of observation to their minds, whilst introducing them to the fascinations of that aristocrat of medical specialization, the science of ophthalmology

R. H Elliot.

BRUG (S. L.). Die parasitologische Diagnostik der menschlichen Fazes. [**The Parasitological Diagnosis of Human Faeces.**] Ins Deutsche ubersetzt und neu herausgegeben von Dr G. H. Klövekorn.—8vo. 64 pp. With 8 plates. 1926. Leipzig: Verlag von Johann Ambrosius Barth. [Price Rm. 4 80.]

This work is a German version of a Dutch booklet which appeared in 1922, and was then reviewed in this *Bulletin* (Vol 20, p 929) Though described as "newly edited" by the translator, it is actually a free translation of the original—even the misprints in the Dutch version being retained in some instances, though a few trivial changes (mostly omissions) and minor corrections have been made. In scope and treatment of the subject the work is unaltered; and it will doubtless be welcomed by a wider circle than its original, as the language in which it is now presented is more generally read.

It seems regrettable that, in issuing this "new edition," the author (or editor) has been unable to avail himself of the opportunity of bringing the work up to date. In the four years which have elapsed since it first appeared much new information has accumulated. Methods of cultivating intestinal protozoa have, especially, been greatly developed in the interim; and cultivation has, in consequence, afforded new and valuable aids to diagnosis. Any account of "the parasitological diagnosis of human faeces" which ignores this aspect of the matter must, therefore, be now regarded—in so far as the protozoa are concerned—as incomplete. The inclusion of a chapter dealing with methods of cultivating intestinal amoebae and flagellates would have greatly enhanced the utility of the work as a whole.

Clifford Dobell.

BUREAU OF HYGIENE AND TROPICAL DISEASES.

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HELMINTHIASIS.

McKenzie (A.). **Observations on Filariasis, Yaws and Intestinal Helminthic Infections in the Cook Islands with Notes on the Breeding Habits of** *Stegomyia pseudoscutellaris*.—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. June 18. Vol. 19. No. 3. pp. 138–149. With 4 text figs.

The author examined for filarial infection 197 patients of all ages and either sex at Rarotonga and 71 at Aitutaki. Treatment was usually sought on account of abscess, fever with lymphangitis, elephantiasis, and occasionally hydrocele. Amongst the Rarotonga patients filarial embryos were found in 79, or 40 per cent. Only 7 examined were under 10 years of age, and in none of them was the embryo discovered. Nor were they found in any of four cases of elephantiasis. In Aitutaki they were present in half the patients. In one case of elephantiasis and one of hydrocele embryos were present in the blood and in the fluid of the latter.

Infection experiments were carried out with *Culex fatigans*, *Stegomyia fasciata* and *S. pseudoscutellaris*. In the first no living embryos were found in the thoracic muscles after the third day; in the second they were found on the fifth, but the majority appeared to be dead; after 10 days development had made but little progress and none were found alive after the 11th day. With *S. pseudoscutellaris*, however, complete developments of the embryos and migration to the proboscis were seen to occur in 13 days.

As regards other helminthic infections the number of cases examined was small, 121 in all. 16 of these were negative; Necator was found in 76, or 62·8 per cent., Trichuris in 41, or 33·88 per cent., while Ascaris was comparatively rare. Three children suffering with Ascaris infection died with bronchitis symptoms associated with tuberculosis, and it is suggested that the passage of the larvae through the lungs had prepared the soil for the bacillus. [In the Tables inserted the percentages have been in several instances wrongly computed].

H. Harold Scott.

ZSCHUCKE (H.). Ärztliche Erfahrungen auf Kaffeeplantagen in Zentralamerika. [**Medical Experiences on Coffee Plantations in Central America.**]—*Beihefte z. Arch. f. Schiffs- u. Trop-Hyg.* 1925. Vol. 29. No. 2. 56 pp. [Wurmkrankheiten: pp. 18–42 (514–538).]

During his residence in Central America (chiefly Guatemala) the author examined large numbers of individuals for the prevalence of the common intestinal worms. Hookworm varied between 36 per cent. in San Andres Osuna and 97 per cent. in Concepcion; Ascaris between 50 per cent. in Rosario and 89 per cent. in Porvenir; Trichuris was also highest (82 per cent.) in the last-named. The influence of height above sea-level was not noticed, contrary to what LURZ had found in East Africa. 48 heavily infected individuals in San Francisco Miramar harboured an average of 420 worms each. One of the tables given (No. 6) shows well the result of treatment in reducing the degree of infection, though having little or no effect on the incidence. Thus, before treatment there were 81 per cent. light infections, 12 moderate, and 7 severe; 42 per cent. of those examined were infected and the average number of worms was 118 Five months after treatment there was 45 per cent. infection; of these 87 per cent. were lightly infected, 12 moderately and 1 severe, and the average number harboured was 12.

The soil of the coffee-plantations was found to be teeming with nematode larvae, as many as 40 per cent., of which probably between 5 and 6 per cent. were hookworm. The usual recommendations are given as regards latrine accommodation, and the wearing of boots; wooden-soled sandals were tried but were not effective.

Blood examinations were also made and very variable were the results, the haemoglobin ranging from below 30 to over 70 per cent., but the author emphasizes the fact that in his opinion this test is the best measure of the clinical effect of ankylostomiasis.

As regards dealing with the disease, apart from prophylactic measures, in each district 100–200 preliminary examinations were made, and if more than 75 per cent. were found infected, mass-treatment was undertaken. Oil of chenopodium was first employed, then carbon tetrachloride, or a mixture of the two in the proportion of 1 : 11. Two treatments with the tetrachloride proved far the most satisfactory, in doses of 3 cc. for adults and 0·2 cc. for each year of life for children between 1 and 15 years of age. Various other preparations were experimented with, but without much success.

As regards Ascaris, the height above sea-level seemed to have some effect on the intensity of infection. At San Luis (559 metres) 22 examinations showed an average of 15 worms per head; at Morelia (900 m.) 213 examinations showed 65·5 per head. As a predisposing cause of infantile mortality Ascaris infection is believed by the author to play a considerable part. For treatment a mixture of chenopodium and tetrachloride proved better than the former alone, but not to a large extent, 87 as compared with 84 per cent. removal of worms.

Strongyloides stercoralis was rarely met with, Oxyuris and Taenia less commonly than in Europe. Filarial embryos were not seen in over 1,000 thick drop examinations of blood. Elephantiasis cases were rarely encountered, and in the author's opinion these were due to causes other than filariasis. *Onchocerca volvulus* occurs in circumscribed areas.

H. H. S.

Emily (J.). Les parasites intestinaux chez les indigènes du corps d'armée colonial en France. Traitement et prophylaxie. [**Intestinal Parasites among the Natives of the Colonial Army in France.**]—*Bull. Soc. Path. Exot.* 1925. Nov. 11. Vol. 18. No. 9. pp. 694–700.

The author examined nearly 3,000 French colonial troops in order to determine the degree of infection by helminths among them. Of 906 Indo-Chinese 88·96 per cent. were parasitized; of 1,206 Malagasy 78·35 per cent., and of 875 Senegalese 67·08 per cent. Hookworm was the most prevalent in all three. Ascaris came next in the Malagasy and Senegalese, but Trichuris exceeded Ascaris in the Indo-Chinese. Treatment by thymol was given to some, to others carbon tetrachloride. According to the results detailed the tetrachloride proved somewhat superior for hookworm and ascaris, thymol curing 51·57 and carbon tetrachloride 69·87 per cent. of the former, 65·05 and 67·14 per cent. of the latter. Thymol, however, cured 43·01 per cent. of Trichuris cases whereas the tetrachloride cleared up only 21·59 per cent.

One of the patients treated with tetrachloride showed serious toxic symptoms, and the author therefore recommends that thymol only should be used. His method of administration is to prescribe 0·4 gm. calomel the previous evening, and next day 5 gm. thymol in cachets of 1 gm. at hourly intervals, followed one hour after the last dose by 25 gm. sodium sulphate. The diet is restricted to milk.

Prophylaxis consists of the erection of latrines or the use of buckets limed inside and out at each cleansing, and the prohibition of the troops visiting them barefoot.

H. H. S.

Railliet (A.). Les helminthes des animaux domestiques et de l'homme en Indochine. (2e partie.). [**The Helminths of Man and Domestic Animals in Indo-China.**]—*Bull. Soc. Zool. de France.* 1925. May 5. Vol. 50. No. 1. pp. 7–26.

Part 1 of this paper (this *Bulletin*, Vol. 22, p. 863) dealt with the Flatworms of man and the domestic animals in Indo-China. Part 2 deals with the Roundworms. The following Nematodes have been reported from man in this area:—

Strongyloides stercoralis.
Enterobius vermicularis.
Ancylostoma duodenale.
A. ceylanicum.
Necator americanus.
Ascaris lumbricoides.
Gnathostoma spinigerum.
Wuchereria [Filaria] bancrofti.
Trichuris trichiura.

Ternidens deminutus has been recorded from monkeys in Indo-China but not so far from man. *Thelazia callipaeda* is found in the eye of the dog in Burma, and Railliet accepts Leiper's view that this is the same species as has been described from man in China under the names of *Filaria palpebralis* Houghton, 1917 and *Filaria circumocularis* Ward, 1918.

T. W. M. Cameron.

Urchs (Oswald). Ein Fall mit sechsfacher Wurminfektion. [**A Case of Infection with Six Species of Worm.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Dec. 16. Vol. 29. No. 12. pp. 698–703. [13 refs.]

The account presented in this paper reads like an helminthic version of "Aurelia's Unfortunate Young Man." The patient, a man of 29 years, had become progressively emaciated and anaemic and was suspected to be suffering from tuberculosis and treated as such for a year. He then came to hospital, and ova of hookworm, Trichuris and *Schistosoma mansoni* were found in the stools. Next, the blood was examined, and many embryos of *F. bancrofti* were seen. As there was some expectoration it also was examined and ova of Paragonimus were discovered, together with nematode larvae diagnosed as those of Ascaris. To crown all, the Wassermann reaction was positive. The Paragonimus had been contracted when the patient was working in the gold-fields by the Marowijne river, separating French from Dutch Guiana.

Carbon tetrachloride (5 cc.) cleared away Necator and Ascaris and apparently, the Paragonimus also. Tartar emetic intravenously, starting with 3 cc. and increasing to 10 cc. of a 1 per cent. solution, till a total of 2·5 gm. had been given, was employed for the filarial and schistosome infections. Trichuris proved refractory.

H. H. S.

KUDICKE (Robert). Neue Verfahren zur Untersuchung und Prüfung von Wurmmitteln. Versuche an Finnen und Strongyloideslarven. [**New Methods for the Investigation and Trial of Anthelmintics: Experiments on Cysticercus and Strongyloides Larvae.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 189–197.

A new method for testing the action of dye-stuffs and anthelminthic substances is described. The question is dealt with purely from the chemical or pharmacological aspect, not the clinical, hence the results may not coincide with what occurs in the body. The author tested the effect of various dyes, such as malachite-green, brilliant-green, crystal violet, fuchsin, rhohamin B, Congo-red, trypan-red and trypan-blue, thionin, and several others, and also thymol, B-naphthol, chenopodium, chloroform and carbon tetrachloride, on *Cysticercus tenuicollis* and on the filariform larvae of *Strongyloides stercoralis*, placed in glasses so that the action of the dye or drug could be watched.

Both acid and alkaline stains penetrated the cyst-wall, and, as a general rule, those which diffused badly penetrated less well than those which diffused rapidly, but there were several exceptions. Only a few of the results can be given. Crystal violet in a dilution of 1 : 32,000 killed the cysticercus in 18 hours, thionin in 1 : 30,000, malachite-green in 1 : 16,000; trypan-red and trypan-blue appeared to have no effect in dilutions of 1 : 800 and 1 : 1,000 respectively. Thymol and B-naphthol in strong solution prove fatal in 18 hours, but beyond a certain strength the action is not more rapid. Chenopodium is no quicker, but acts in a weaker concentration.

As regards the Strongyloides larvae fuchsin is fatal in 18 hours in a dilution of 1 : 2,000, crystal violet 1 : 16,000. The last killed in 1 hour when diluted 1 : 2,000 and in 2 hours in 1 : 4,000. Concentrated thymol killed in 5 minutes, B-naphthol in 10 minutes; Oil of chenopodium did not render them motionless in less than 2 hours.

H. H. S.

CHANDLER (Asa C.). **The Helminthic Parasites of Cats in Calcutta and the Relation of Cats to Human Helminthic Infections.**—*Indian Jl. Med. Res.* 1925. Oct. Vol. 13. No. 2. pp. 213-227. With 8 figs. on 2 plates. [23 refs.]

This paper is based on examinations of 250 cats, with a view to studying their parasites and, secondly, to determining to what extent the cat serves as a reservoir in Bengal for human parasitic infection. *Opisthorchis felineus* was found in 61 per cent., inhabiting the bile-ducts, but rarely the gall-bladder itself. *Taenia taeniaeformis* existed in 42 per cent., and *Dipylidium caninum* in 43 per cent., and infestation with the latter was often heavy, as many as 75 worms being found in some cats.

As regards Nematodes, *Strongyloides stercoralis* was found in 20 per cent. and *Belascaris mystax* in 65 per cent., but though the incidence was high, the degree of infection was generally light. An important finding was the great prevalence of *Ancylostoma brasiliense* (75 per cent.) with total absence of *A. caninum*, although the latter is widely present in Bengal. *Gnathostoma spinigerum* exhibited a peculiar seasonal prevalence—31·4 per cent. in August–November, absent in the ensuing quarter. They were not uncommonly found in the stomach wall. Since the tumours produced are not likely to disappear, the author concludes that it is the deadliest parasite to which the cat is subject.

The second part of the paper consists practically of a list of records in which these parasites have been noted as occurring in man, and the author concludes by saying that the " domestic cat in Calcutta, while serving as a reservoir for a considerable number of occasional human helminthic parasites, is not involved in the spread of any common helminthic infection with the possible exception of *Strongyloides stercoralis.*"

H. H. S.

CHANDLER (Asa C.) & CHOPRA (R. N.) **The Toxicity of Carbon Tetrachloride to Cats. A Warning.**—*Indian Med. Gaz.* 1925. Sept. Vol. 60. No. 9. pp. 406–407. [2 refs.]

From experiments with carbon tetrachloride on 87 cats the authors state that 92 per cent. died or were killed in a dying condition regardless of dosage or diet. These results are strikingly different from those of HALL and SHILLINGER (1923), but the authors are convinced that it is very unsafe to attempt the treatment of feline animals with this drug.

R. T. Leiper.

SMITH (R.) & RODRIGUEZ (J. J.) [La anemia perniciosa por parásitos intestinales.] **[Pernicious Anaemia due to Intestinal Parasites.]**—*Rev. Méd. Cubana.* Habana. 1925. June. [Summarized in *Rev. Española de Med. Cirug.* Barcelona. 1925. Oct. Vol. 8. No. 88. p. 578.]

Though symptoms of pernicious anaemia are found in some cases of infection by Diphyllobothrium and Ancylostoma, more persons harbour these parasites without developing the anaemia. Mention is made of Seyderhelm's extract, " bothriocephalinc," which led, after repeated injection into animals, to anaemia of the pernicious type, and, as regards ankylostomiasis, the anaemia is ascribed to haemorrhages from toxins secreted by the worms, combined with an anticoagulant extracted from the anterior part. Miners' anaemia he ascribes to syphilis, alcoholism and hard work [in these days ?] as well as to hookworms.

H. Harold Scott.

HALL (Alexander Hislop) **Observations on Bilharziosis in Iraq.**—*Jl Roy Army Med Corps* 1925 Jan & Feb Vol 44 Nos 1 & 2 pp 1–10, 92–102 With 3 maps & 1 chart in text [33 refs]

Experience gained in the Army in Mesopotamia and later in the Iraq Health Service from 1919 to 1922 leads the author to state that Bilharzia is most prevalent in the Euphrates Valley from the Hindiyah Barrage to the sea, and that it exists in areas affected by the tide of the Persian Gulf The problems of the disease differ according to the locality. In a typical rural area, e g , the Division or Liwa of Diwaniyeh, almost the entire population of 200,000 is engaged upon agricultural pursuits and depends upon the activities of the irrigation department at the Hindiyah Barrage for the supply of water This district is heavily infected with Bilharzia—an assessment of 80 per cent would be no exaggeration Practically all the cases came from the "flow" land and from the low-lying towns, in 16 small irrigation channels and stagnant pools innumerable snails could be found The author discusses methods of eradicating the disease in these districts and believes that 'the drying process is practicable in all the districts under consideration and not beyond the financial capabilities of the country'

The town of Basrah presents a somewhat different problem An examination of schoolboys there showed infection in 1920-21 in 63 per cent of those in the Government Schools, 48 per cent in the American Schools, and 16 per cent. in the Jewish Schools During the session 1921–22 the figures were 47 per cent in Government Schools, 43 per cent in American Schools and 29 per cent in Jewish Schools—giving out of a total of 711 children 47 per cent infected—all with *S haematobium* The author considers that complete preventive measures are not practicable in the case of Basrah but that curative treatment here can be carried out with such a measure of success that the risk of re infection should be reduced almost to a negligible point Remarkably few Europeans become infected with Bilharzia in Iraq The author knows of only one case amongst the civil population, and up to the end of 1918 only 3 European Military cases occurred In 1920, however, 111 British troops out of 495 garrisoning Kufa were found to be passing numerous ova in their urine In the Cantonment at Hinaidi, near Baghdad, the snails collected included numerous *Isidora* (*Bullinus*) *contorta* The channels and ponds were well cleared and the rate of water increased Once every 3 months the water was entirely cut off for a period of 14 days These measures produced an undoubted reduction in the snail population

R T L

FABRE (H) Bilharziose intestinale a forme de tuberculose abdominale. [**Intestinal Bilharziasis simulating Abdominal Tuberculosis.**]—*Bull Soc Path Exot* 1925 Oct 14 Vol 18 No 8 pp 653–654

The author has seen 50 cases of *S mansoni* infection in Guadeloupe during the past year. Three of these are recorded in detail on account of the symptoms resembling those of tuberculosis, namely, evening rise of temperature, constipation, wasting, etc In one instance the similarity to tuberculous peritonitis was very marked There was continued fever rising higher towards evening, ascites, constipation and much wasting of limbs, Great improvement resulted from intravenous injection of tartar emetic given on discovery of the ova in the faeces.

H. H. S.

STÜHMER (A.). Bilharziaerkrankung der Blase. [**Bladder Bilharziasis.**] —*Dermat. Ztschr.* 1925. Mar. Vol. 43. No. 3/4. pp. 132–139. With 3 text figs.

Cystoscopic examination was made in the case of an Egyptian student who had had repeated attacks of gonorrhoea but was passing blood in the urine. Ova of *Schistosoma haematobium* were demonstrated. Three good reproductions are given of the local conditions found. In the bladder-wall there were aggregations of whitish nodules about the size of a pin's head beneath the mucous surface, which itself showed no lesions. Round the opening of the right ureter was a papillomatous swelling as large as a cherry with a cauliflower-like surface, but without surrounding inflammation. A similar but flatter growth surrounded the left ureteral opening, the adjoining mucous surface presenting a brown appearance. The blood contained 18 per cent. eosinophile cells.

Treatment with tartar emetic was undertaken, starting with 0·02 gm.; the next day 0·03 gm., and two days later 0·05 gm. After this, blood was no longer found in the urine. The dose was increased gradually to a maximum of 0·13 gm. to a total of 1·33 gm. in the course of four weeks. Three months later the local condition was found to have improved, the papillomata were smaller and no ova could be found. The patient presented himself again 9 months later but felt so well that he refused to submit to further cystoscopy.

H. H. S.

GIBSON (R. W. B.). **Bilharziasis of the Female Genital Tract.**—*Med. Jl S. Africa.* 1925. Sept. Vol. 21. No. 2. pp. 44–45.

This is a brief general account of schistosomiasis of the female genitalia. An interesting case is mentioned in which one Fallopian tube and its mesosalpinx were infiltrated with ova of *S. haematobium*. There was also an arrested tubal pregnancy on the same side. The other conditions mentioned have already been recorded.

H H. S.

CAWSTON (F. G.). **Bilharzia Infection at the Source of our Rivers.** [Correspondence.]—*Med. Jl. S. Africa.* 1925. Sept. Vol. 21. No. 2. p. 58.

Measures adopted in Mauritius to train the small rivers appear suited to the eradication of bilharzia carriers from streams in South Africa. On the mines dams which are known to be infested should be treated with cyanide from the dumps. Slaked lime is stated to be of even greater practical value against snails than copper sulphate in shallow portions of large collections of water. The author also expresses regret that the Government has erected a large dam at Hartebeestpoort without utilizing any methods for keeping molluscan intermediaries under control.

R. T. L.

CAWSTON (F. G.). *Schistosomum ? spindalis* **Montgomery in a Zululand School-Boy.**—*Jl. Trop. Med. & Hyg.* 1925. Nov. 16. Vol. 28. No. 22. p. 406. [4 refs.]

In the urine of a schoolboy, 14 years of age, suffering from haematuria were numerous eggs of *S. haematobium.* About one-fifth of the eggs possessed a straight border when viewed from the lateral position but when viewed from above presented the appearance of the outline of those of *S. bovis.* The terminal spine was not heart shaped. "The fully developed ovum measured 0·24 mm., but as the extremities of the shell were solid the miracidium did not appear to be much longer than that of *S. haematobium.*"

R. T. L.

CHRISTOPHERSON (J. B.). **Rectal Injection of Tartar Emetic for Bilharziasis.** [Correspondence.]—*Brit. Med. Jl.* 1925. Nov. 7. pp. 866–867.

Referring to papers by WILSON (this *Bulletin*, Vol. 20, p, 215) and Barcroft ANDERSON (*B.M.J.* 1925, p. 700), in which the rectal injection of antimony for bilharziasis is advocated, the author recognizes that although all well-equipped doctors might not agree that an enema is simpler, safer or more convenient than an intravenous injection, rectal injections are undoubtedly more appropriate for nurses and unqualified persons and might be preferred by them in the tropics, although the author believes that it has been tried by nurses in Nyasaland and abandoned. The difficulty is that no one has satisfactorily shown what becomes of the tartar emetic when given as an enema, and although the immediate effects may seem satisfactory there is the possibility of the adult worms surviving and giving rise to relapses.

R. T. L.

CAWSTON (F. G.). **The Use of Emetine in treating Bilharzia Disease in the Child.**—*Jl. Roy. Army Med. Corps.* 1926. Jan. Vol. 46. No. 1. pp. 57–60.

In the successful treatment of urinary schistosomiasis by emetine not only the dose but the length of treatment is important. The author found that a permanent cure was assured in all patients under 15 years of age who were able to tolerate a total of 12–15 grains in not more than 24 days. Among the examples given is one in which 10¾ gr. failed to cure a boy of 10 years when the treatment was spread over a period of 40 days, but ten months later cure was effected by 13½ gr. in 24 days. Nevertheless, he states that the use of emetine is unwarranted in cases where intravenous tartar emetic can be employed. Details of three patients in one family are given: in one, a girl of 12 years, recovery resulted from 11½ gr. in four weeks; a boy of 9¾ years needed 6¼ gr. of tartar emetic after 8¼ gr. of emetine, while a boy of 14 years received in all 10 gr. of tartar emetic and 2 gr. of emetine before cure was brought about. Emetine was not persisted with if tachycardia, weakness of limbs or other signs of cardiac depression became manifest.

H. H. S.

BACIGALUPO (F.). Schistosomose vésicale d'origine européenne. **[Urinary Schistosomiasis of European Origin.]**—*C. R. Soc. Biol* 1925 Oct. 30 Vol 93 No. 30. pp. 1020–1021.

The author states that urinary schistosomiasis does not occur in Buenos Aires except in imported cases He has seen 20 such, and all were from Portugal. He has tried experimentally to infect various local snails, but without success

H. H. S.

FAIRLEY (N. Hamilton). **Complement Fixation with Bilharzia. Part I. The Lipoidal Nature of Cercarial Antigen as used in the Complement Fixation Test for Mammalian Bilharziosis.**—*Jl. Path. & Bact.* 1925. Oct. Vol. 28. No. 4. pp. 591–606. [30 refs.]

It has been generally agreed that only protein or a closely allied substance can function as an antigen in the strict sense, i.e., be capable of stimulating the production of specific anti-substances (antibodies) when introduced into the living body. Evidence of the specific relationship between the antigen and the homologous anti-substance (contained in the serum of the treated animals) is afforded by the fact that when the two are brought together *in vitro* under suitable conditions they combine and so some physical or chemical change is brought about; on the other hand, when heterologous antigens and anti-substances are mixed or when the antigen is added to serum of a normal animal the changes referred to do not occur. Now, in certain cases the phenomena of an antigen-antibody reaction are manifested when an alcoholic extract of the antigen is added to the anti-substance *in vitro*. Such is the case with the Forssman antibody; thus the antiserum derived from a rabbit injected with a watery suspension of guineapig's organs (e g, kidney) when mixed with a saline emulsion of alcoholic extract of guineapig's tissue exhibits flocculation and possesses the power of fixing serum-complement (although the alcoholic extract cannot by itself generate the anti-substance *in vivo*). Similarly, complement fixation may be obtained with the sera of certain cases of tuberculosis when added to alcoholic extracts of tubercle bacilli. Thus, in EHRLICH's sense, the alcoholic extracts in those instances appear to contain the "receptors." It has been found that the active constituent of the alcoholic extract may reside in the ether-soluble, acetone-insoluble fraction, i e., the lecithin. But this crude lecithin may not be the essential constituent; it may merely have attached the latter to itself. Investigation of lecithin and allied lipoids has shown that they do not lend themselves readily to purification by chemical methods; and that, as ordinarily prepared, they are usually mixtures of allied substances; also they have a great capacity for retaining or adsorbing substances of other kinds.

In the case of a number of helminths the receptors have been stated by various investigators to pass into solution when the worms are extracted with alcohol. In connexion with *S. mansoni* and *S. haematobium* infections in man Fairley found that a suitable antigen was obtained by extracting with absolute alcohol the corresponding cercariae located in the livers of the infected snails.* His present work is an investigation of *Schistosoma spindalis* infection in goats. The snails infected with the cercariae of this worm were used as the source of " antigen " and the complement fixation reaction was tested for by the use of the sera of 3 infected goats (2 experimental infections and 1 natural). By way of control the sera of 3 non-infected animals and also human sera from cases of frank syphilis which gave a positive Wassermann reaction were employed. The sera were heated at 55·5°C. for 15 minutes before the test. The alcoholic antigens were prepared in several ways, viz., (a) by extracting with absolute alcohol moist, freshly dissected livers infected with cercariae ; (*b*) by extracting with various strengths of alcohol infected livers which had been previously dried over sulphuric acid at reduced pressure and then powdered (the strengths of alcohol used were absolute, 90, 75, 50, 30 per cent. ; (*c*) by treating with dry acetone and then extracting with absolute alcohol dry material similar to that used under (*b*), (*d*) the residue obtained after procedure (*c*) was extracted in two alternative ways—with 50 per cent. alcohol or with saline (0·85 per cent. NaCl). All the extracts prepared by procedures (*a*), (*b*) and (*c*) when used in high dilutions—e.g., 1/300 or even 1/600 in the case of antigens (*b*) and (*c*)—led to fixation of complement in the presence of the sera of the infected goats, whereas little or no fixation resulted with syphilitic or normal sera in 7 to 10 times greater, or, in the case of extracts made with the more dilute alcohols, in even higher concentrations of the antigen. In the above tests a fixed amount of complement (3 doses for the test corpuscles) was used and a fixed amount of the sera to be examined. Another method of demonstrating the reaction was also employed, viz., an amount of the antigen which in preliminary tests had been shown to be less than that which yielded complement fixation with syphilitic sera was tested in a series of tubes, each of which contained the same fixed amount of the sera to be examined, but to which varying amounts of complement were added, viz., 1½ up to 12 or 15 doses. Here again the amount of complement fixed by the antigens in the presence of the infected goats' sera was from 3 to 10 times greater than that fixed in the presence of normal or syphilitic sera. Anticomplementary or haemolytic properties of the antigens were not disturbing factors. Thus the methods employed for detecting the presence or absence of complement fixation were exceedingly thorough. As an example, the results in the latter series of tests showed that an antigen prepared from dried infected livers extracted with 90 per cent. alcohol fixed completely 9 doses of complement along with infected goat's serum, but failed to fix 3 doses along with normal goat's serum or syphilitic serum. The antigens prepared with dilute alcohol were somewhat weaker than those made with alcohol of 75 per cent. or higher concentration. The antigenic effect of the fraction soluble in acetone was practically negligible. The constituents extracted by the procedures under (*d*) were practically devoid of antigenic properties. The extracts prepared with absolute alcohol from moist, as well as dry, livers gave negative reactions with various chemical tests for protein.

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* A similar extract prepared from the livers of *Bullinus dybowski* infected with *Gastrodiscus aegyptiacus* cercariae did *not* fix complement in the presence of bilharzial sera. This result permitted the conclusion to be drawn that " the antigenic properties of the extract of snails' livers infected with bilharzia must be dependent upon specific substances extracted from the cercariae themselves." (FAIRLEY, *Jl. Roy. Army Med. Corps*, 1919, Vol. 32, p. 243.)

The general conclusion reached is that the specific reacting substances contained in the livers of snails infected with bilharzial cercariae are extracted by practically pure alcohol and are lipoidal, not protein in nature. One of the experimentally infected goats whose serum was negative to begin with yielded a positive reaction in a week after inoculation, and its serum continued to react positively until autopsy, about 17 months later. Fairley's work is described with great exactitude, and his observations present a close analogy to phenomena observed in the case of heterophile antigens and of the Wassermann reaction. The conclusions as to the nature and solubility of the bilharzial antigen differ from those published by Miss G. Z. L. LE BAS in the case of the antigen contained in the livers of snails infected with cercariae of *S. mansoni*. In an Addendum to Fairley's paper, Miss LE BAS draws attention to certain differences in the methods of preparing the antigens and in their properties, as recorded in the respective authors' works.

C. H. Browning.

NEWHAM (H. B.). **The Pathology of** *Clonorchis* **Infection of the Pancreas.**—*Jl. Trop. Med. & Hyg.* 1925. Dec. 15. Vol. 28. No. 24. pp. 437–438. With 6 figs. on 1 plate. [3 refs.]

Clonorchis infection of the pancreas, though previously recorded by several writers, is, as compared with involvement of the liver, sufficiently uncommon to render the report of another case interesting. The author describes the naked-eye and histological changes set up by the presence of the parasite in the pancreatic ducts, in particular the distension of the lumen and the local proliferation and metaplasia of the epithelium. It is a matter for regret that nothing is known of the clinical history of the case nor of the condition of the liver. One of the microphotographs accompanying the article strongly suggests commencing malignancy, as the author remarks, and it would be interesting to know whether the irritative effect is accompanied by a local eosinophilia such as is known to occur with some other helminthic infections.

H. H. S.

FAUST (Ernest Carroll) & NISHIGORI (Masao). **A Preliminary Report on the Life Cycles of Two New Heterophyid Flukes occurring in the Sino-Japanese Areas.**—*China Med. Jl* 1925. Oct. Vol 39. No. 10. pp. 914–916. [2 refs.]

Two new species of a new genus of Heterophyid trematode named *Monorchotrema taihokui* and *M. taichui* are described in this preliminary note. They occur in nature in the night Heron (*Nycticorax nycticorax*) and in dogs in the regions of Taihoku and Taichu in Formosa. The former develops in *Melania reiniana* var. *hidachiens*; the latter species in *Melania obliquegranosa.* Experimentally they have been developed in various mammals including man, After leaving the molluscan intermediary the cercariae encyst in the outer cartilaginous parts of certain freshwater fish.

A brief description of these minute worms, which measure 0·39 and 0·35 mm. respectively, is given, but a fuller account of the morphology of the parasites is promised in a later communication.

R. T. L.

DEW (H. R.). **Daughter Cyst Formation in Hydatid Disease; Some Observations on its Causation and Effects.**—*Med. Jl. Australia.* 1925. Oct. 24. 12th Year. Vol. 2. No. 17. pp. 497–505. With 5 text figs. [14 refs.]

This is a most informative article, and one which will do much to clear up the vexed question of daughter-cyst formation in hydatids. The whole is a well-marshalled array of facts tending to prove that when the normal development of brood-capsules in the primary cyst is interrupted, as it were, by daughter—and perhaps grand-daughter—cyst stages, this is not a haphazard procedure, but the result of some agent detrimental to the welfare of the cyst. The theories usually formulated are first stated: (1) That there are two distinct parasites. This has been disproved by experimental, clinical and pathological evidence. (2) That daughter-cyst formation occurs in cysts which have attained their full development. They may, however, be found in some young cysts and are often absent in large ones of many years' growth. (3) That they are the result of some accident or interference with the original cyst; in other words, their formation is a defensive action on the part of the parasite. Such accidents include mechanical trauma, such as blows, muscular contractions, or operative interference, as puncture by a trocar; chemical trauma, such as entry of bile or urine into the cyst in too small amount to kill it, or between the cyst and its adventitia; or, lastly, bacterial trauma, such as infective processes or general toxaemia.

Examples of the modes of action of these are given, a few of which may be quoted. Slight trauma may result in the separation of a portion of the germinal membrane into the cyst-fluid, and since the delicate scolices would be thus endangered, the membrane reacts by forming a fresh laminated layer for protection and starts again. Escape of fluid, as in operative puncture, would endanger the scolices by lowering tension, and a similar reaction is set up. The author brings forward pathological evidence in favour of his thesis. Thus, daughter-cysts are fairly common in hepatic hydatids, and they almost invariably show staining with bile (gross infection by bile causes death of the cyst), and it appears that entry of bile in small amounts provokes daughter-cyst formation. In pulmonary cysts, on the contrary, daughter-cysts are rare; here the cyst is more free to grow in the yielding and vascular tissue, while it is protected from injury by the rigid thoracic wall. When near a bronchus and infection of the perivesicular spaces occurs daughter-cysts are found. In the kidney daughter-cyst formation is the rule, the stimulus here being the opening up of urinary channels and the entry of urine. Subcutaneous cysts are liable to mechanical injury, intramuscular cysts to the same and also to interference with growth by repeated muscular contraction, and in both these situations daughter-cyst formation is invariable.

Age also plays a part; in children daughter-cysts are rarely met with, and then only in such cysts as have been subjected to adverse conditions as a suppurative process or the entry of bile. The cysts of children are young cysts; as time goes on the cysts become more liable to trauma and the proportion of cases with daughter-cysts increases.

The dangers of tapping cysts is rightly insisted upon, since it not only leads often to dissemination at the time but acts also as a stimulus to daughter-cyst production.

Immunological evidence is also in favour of the author's contention. The complement-fixation test is not always positive when simple cysts are present, but the proportion increases where daughter-cysts are present, and complications such as rupture or operative interference raise the proportion practically to 100 per cent.

Finally, he applies his observations to clinical medicine, emphasizing, amongst others, the following points: (1) The occurrence of daughter-cysts means that there has been some complications to the cyst whereby the pathology, symptomatology, subsequent history and methods of treatment will be modified. (2) The prognosis in these cases is worse and more uncertain than in simple cysts. (3) Owing to the persistence and power of growth of the hydatid germinal membrane, puncture of a simple cyst not only cannot be relied upon to cure, but may be followed by recurrence and secondary sowing of cysts. (4) All hydatid cysts should be operated upon as soon as diagnosis is established, as all are potentially dangerous and the longer they are left the more likely are complications to occur. (5) The presence of omental hydatids, especially if thev are multiple, should at once lead to examination of the pelvis and liver. (6) Whenever an intrathoracic cyst is found to contain daughter-cysts an hepatic origin should be suspected and the diaphragmatic region be investigated.

H. H. S.

JAFFÉ (Ludwig) Zum biologischen Nachweis der Echinokokkeninfektion. [**The Biological Diagnosis of Echinococcus Infection.**]—*Deut. Med. Woch.* 1925. July 10. Vol. 51. No. 28. pp. 1156–1157. [6 refs.]

In view of the reliance placed by many on the value of the complement-fixation test in the diagnosis of hydatid infection the five cases recorded here are of great interest. In four of them the results were definitely negative, though large hydatid cysts were found at operation in three. In one the test proved positive subsequently. The fourth was diagnosed on X-ray appearances but was not operated upon. In the fifth the reaction was returned as "suspicious," death occurred from cirrhosis of the liver, and an autopsy was held, but no hydatids were discovered.

H. H. S.

DE LEON (Walfrido) & LEIVA (Lamberto). **Echinococcus Cyst of the Human Lung.**—*Philippine Jl. Sci.* 1925. July. Vol. 27. No. 3. pp. 351–364. With 3 text figs. [16 refs.]

Among 8,000 autopsies the authors found one case, a woman aged 34 years, with two small hydatids at the root of the left lung, death being due to empyema of the gall-bladder and suppurative cholangitis. The presence of these cysts is made the text for a general account of *Taenia echinococcus* and its life-history according to the views of LEUCKART, MONIEZ, and others. No mention is made of DÉVÉ's work, which has done so much to clear up this vexed question, nor is the Casoni reaction mentioned amongst the aids to diagnosis. The statement that the "acephalocyst . . . may develop further into the mature echinococcus containing brood-capsules with scolices" will be news to helminthologists.

H. H. S.

SHRIVASTAVA (N. P.). **A Case of Hydatid Cyst of the Right Parotid and Submaxillary Glands.**—*Indian Med. Gaz.* 1925. Nov. Vol. 60. No. 11. p. 532.

A cyst the size of a cocoanut affecting the right parotid and with prolongations beneath the sternomastoid and lower jaw in a Gond who reared dogs for hare-shooting proved at operation to be a hydatid. It is suggested that echinococcus ova had been taken with contaminated food and had passed up Wharton's and Stenson's ducts The swelling had been growing for 20 years.

H. H S.

FAUST (Ernest Carroll) **On a Case of Triradiate** *Taenia solium* **from North China.**—*China Med Jl* 1925 Sept. Vol 39 No 9. pp 800–804. With 3 text figs. [9 refs]

The specimen, from the Deutsches Hospital, Peking, consisted of 200 cm. of a milky-white taenoid cestode passed by an European child after an anthelmintic. The worm was abnormal, having one side thick and slightly fluted, while the other was cleft up the mid-longitudinal axis. The end view of a gravid segment showed the worm to be triradiate The uterus was injected with Indian ink, and in each of the three elements of the segment from eight to ten uterine branches could be counted This favoured the diagnosis of *Taenia solium*. Usually, in Taenia, the successive genital pores alternate irregularly, but in this abnormal specimen all the genital pores are located on the main stem.

R T L

ESPIÉ (A.). Sur l'existence de *Hymenolepis nana* en Tunisie. [*H. nana* **in Tunis.**]—*Arch. Inst. Pasteur de Tunis.* 1925. July. Vol. 14. No. 3. pp. 340–342.

In 1922 the author first found ova of *Hymenolepis nana* in the stools of a young native of Sfax, and later in two Arabs. They were also found in 28 instances out of 396 samples of faeces in Gafsa (7 per cent.). 600 persons were examined from the civil prison in Sfax and 5 per cent. were found to be passing the ova. The natives apparently exhibit no symptoms, at all events they make no complaint, but infected Europeans suffer from gastro-intestinal disturbances. It would be interesting to know the proportion of school-children infested, but permission to make this investigation has not yet been obtained.

H. H. S.

SAHEKI (Yoshihisa). **An Experimental Study on the Development of the Dwarf Tapeworm** (*Hymenolepis nana*).—*Ann. Trop. Med. & Parasit.* 1925. Sept. 30. Vol. 19. No. 3. pp. 305–308.

Saheki finds that the development of *H. nana* in mice, rats, monkeys and man is direct. The source of the eggs in each experiment is not stated.

T. W. M. C.

i. PONS (R.). Existence d'*Hymenolepis nana* (Von Siebold, 1852) en Cochinchine. [*H. nana* **in Cochin China.**]—*Bull. Soc. Path. Exot.* 1925. Nov. 11. Vol. 18. No. 9. pp 722–723.

ii. GEDOELST (L.). A propos de l'*Hymenolepis diminuta* (Rud., 1819). [*Hymenolepis diminuta*]—*C. R. Soc. Biol.* 1925. Dec. 18. Vol. 93. No. 37. pp. 1529–1530.

iii CORREIA (F da Silva) Presence de taenia chez un enfant de deux mois **[Tapeworm in a Two-Months-Old Child.]**—*C R Soc Biol* 1925 Dec 18 Vol 93 No 37 pp 1555–1556

i Examination of 2 500 specimens of faeces of natives of Cochin China revealed 8 cases or 0 32 per cent of infection with *H nana* The author speaks of the ' apparent morphological identity of *H nana* and *H diminuta* "[!]

H H S

ii Gedoelst records for the first time the presence of *Hymenolepis diminuta* in monkeys He has found it in *Cercopithecus smithi* in association with *Ternidens deminutus* and *Trichuris trichiura*

iii Correia records the presence of *Dipylidium caninum* in a child two months old—the infection probably coming from a pet dog which was kept in intimate association with the owners

T W M C

SAMBON (Louis W) **Gongylonema.**—*Jl Trop Med & Hyg* 1925 Sept 1 Vol 28 No 17 pp 313–316 With 2 text figs.

This is a review of recent literature on our knowledge of Gongylonema Sambon has examined specimens found by ALESSANDRINI in a girl in Italy and finds that they belong to the common species of ruminants in that country—*G scutatum*

T W M. C

YOKOGAWA (Sadamu) **On a New Species of Nematode,** *Gongylonema orientale,* **found in Formosa.**—*Jl Parasit* 1925 June Vol 11 No 4 pp 195–200 With 5 figs on 1 plate [4 refs]

This new species of Gongylonema was obtained by experimentally feeding white rats It is closely related to *G neoplasticum,* both in morphology and pathology It reaches maturity in 35 to 42 days

T W M C

YOKOGAWA (S) **On the Cancroid Growths caused by** *Gongylonema orientale* **n. sp. in the Rat.**—*Taiwan Igakkai Zasshi* (*Jl Med Assoc Formosa*) 1925 Mar English summary pp 1–20 With 6 figs on 1 plate [In Japanese]

Experimental studies with *Gongylonema orientalis,* which the author had found as a new species infesting the epithelium of the mucosa of the cardiac portion of the stomach, oesophagus, tongue and mouth of the rat showed that cancroid growths eventually supervened in the foci of thickening and the papillomatous and heterotropic deep growths of the mucosa

R T L

YOKOKAWA (Sadamu) **[On Epithelioma of the Mucous Membrane of the Stomach, Esophagus and Oral Cavity of the Rat due to the Infection from** *Gongylostoma orientalis, Yokokawai* **]**—*Taiwan Igakkwai Zasshi* (*Jl of Formosan Med Soc*) [Summarized in *Japan Med World* 1925 Sept 15 Vol 5 No 9 p 255]

The author fed albino rats daily with one or two specimens of *Gongylostoma* [misprint for *Gongylonema*] collected in Taihoku City or its vicinity He found that he could successfully induce epithelial changes, i e , the proliferation of the epithelial flat cells, which layer the worm was found to infest, proliferation and hypertrophy of the mucous epithelium, papillomatous growths and adventitious deep growths. These changes were found to be only the proliferation of the normal cells, but if inflammatory stimuli of any kind were applied at the same time there occurred a development of carcinomatous changes.

R. T. L.

SCHULZ (R. Ed.). Sur la morphologie du *Physaloptera caucasica* von Linstow, 1902, de l'homme. **[Morphology of** ***P. caucasica,*** **a Human Parasite.]**—*Ann. Parasit. Humaine et Comparée.* 1926. Jan. 1. Vol. 4. No. 1. pp. 74–84. With 6 text figs. [3 refs.]

After a careful and detailed re-examination of the type of specimens of *P. caucasica,* Schulz finds that it differs from the only other species of Physaloptera recorded from man, *P. mordens* Leiper, in the following particulars :—

	P. caucasica.	*P. mordens.*
Total length		
Female ...	24 mm.	41–100 mm.
Male ...	12 mm.	29–34 mm.
Teeth	Presence of small teeth on border of lips.	No teeth present.
Spicules		
Left... ...	3 2 mm.	4 6–5 5 mm.
Right ...	·62 mm	·476– ·5 mm
Eggs	·065 mm ...·045 mm.	·045–·049... ·032– 034 mm

Schulz also finds that v. LINSTOW's description was wrong in several particulars.

T. W. M. C.

CORSON (J. F.). **A Note on Microfilariae in Tanganyika Territory.**—*Ann. Trop. Med. & Parasit.* 1925. Dec. 16. Vol. 19. No. 4. pp. 381–386. [18 refs.]

The embryos of *Filaria bancrofti* and *Acanthocheilonema perstans* are the only known forms of filarial embryos proved to occur in Tanganyika Territory. The author examined 768 thick films, mainly of Africans but also of a few Indians, and found embryos in 6·7 per cent. Of 140 school-pupils 5·7 per cent. had embryos of *F. bancrofti* and one *perstans,* while amongst 140 prisoners there were 7 of the former, 5 of the latter.

These figures are no gauge of the prevalence of filariasis, since the films were made in the daytime and the periodicity, in the former at least, is very marked even at corresponding hours on different nights (e.g. 235 and 604 in 20 cmm., of blood at 11 p.m.), whereas in the daytime they might be so few as to be missed altogether.

H. H. S.

HUMPHRY (E.) & MCINTOSH (Ronald D.). **Notes on Cases of Filariasis in North Queensland.**—*Med. Jl. Australia.* 1925. Aug. 8. Vol. 2. No. 6. pp. 165–169. With 4 text figs. [5 refs.]

Six cases of filariasis are reported from Queensland. There is nothing particular to note about them, but they are serviceable in bringing forward, firstly, the fact that cases of this disease are not infrequent in

Queensland, and, secondly, that in patients complaining of "rheumatic" joint pains, and others having acute abdominal attacks with pain and vomiting, the possible filarial cause should be borne in mind.

H. H. S.

HERRMANN (R.) & GENEVRAY (J.). Filariose chez un Européen en Nouvelle-Calédonie. [**Filariasis in a European in New Caledonia.**] —*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 651–652.

Filariasis appears to be rare in Europeans in New Caledonia. One case was recorded in 1911 and no more until the one here given, in 1923. The patient, a boy of 13 years, had haematochyluria and embryos of *Filaria bancrofti* were found in the fluid. Treatment by injections of sulpharsenol, 12, 14 and 24 cgm. at 48-hour intervals was followed by clearing of the urine and disappearance of the embryos. The following year, however, embryos, though few, were found in the blood, but the patient, regarding himself as cured, refused further treatment.

H. H. S.

DECROP & STIER. Sur un cas de filariose observé à Tanger [**A Case of Filariasis at Tangier.**]—*Bull. Soc. Française de Dermat. et Syph.* 1925. July. No. 7 pp. 362–363.

Filarial infection is rare in Tangier. The author gives clinical notes of a case from the town of Tangier with cardiac symptoms in which filaria embryos were associated with schistosoma eggs in the urine.

R. T. L.

TAKESHITA (Shyoji) & OKUDA (Midzuho). [**On the Cultivation of Bancroft's Filarial Larvae and Animal Inoculation Experiments.**]—*Igaku Chuo Zasshi* (*Central Jl. of Med.*). 1925. Aug. Vol. 23. No. 3. [Summarized in *Japan Med. World.* 1925. Oct 15. Vol 5. No. 10. p. 296.]

It is stated in the English summary that the authors have devised two kinds of apparatus for the "cultivation" of the larvae of *Filaria bancrofti.* In one the larvae lived for 12 to 14 days in normal saline or "cattle haemoglobinized saline." In the other with the same medium the larvae could be kept alive 23 days. The optimum temperature was "11–5 C." Using slices of animal organs especially of lung and liver the results obtained were inferior to those obtained by the use of "cattle haemoglobinized saline."

R. T. L.

OKUDA (Mizuho). [**On Filariasis Bancrofti.**]—*Igaku Chuo Zasshi* (*Central Jl. of Med.*). 1925. Sept. Vol. 23. No. 5. [Summarized in *Japan Med. World.* 1925. Nov. 15. Vol. 5. No. 11. p. 320.]

There is no specific drug for the cure of filariasis, but urotropin, filarisin, salvarsan and "Yamada's Filaria Pills" were found by the author to ameliorate the symptoms of chyluria.

R. T. L.

ABEL (E.) & BRENAS (P.). Méningite grave d'origine ascaridienne. [**Grave Meningitis of Ascaris Origin.**]—*Arch. Méd. des Enfants.* 1925. July. Vol. 28 No. 7. pp. 426–432. [22 refs.]

The case of a child, seven years of age, is recorded in whom symptoms very suggestive of tetanus appeared, later yielding place to those of meningitis—rigidity of limbs, positive Kernig's and Brudzinski's signs, delirium, etc. The cerebrospinal fluid showed 250 cells per cmm., 65 per cent. of which were polynuclears and 35 per cent. lymphocytes. Cultural tests for the meningococcus were, however, negative, and after a week of anxiety a dose of santonin expelled a dozen ascarides and by the following day improvement was marked. The results of examination of the spinal fluid point to a definite meningitis rather than to a reflex "meningismus," and the case is instructive in showing from the clinical aspect that such do occur, and from the helminthological that the toxins of ascaris appear to have a certain predilection for the nervous system.

H. H. S.

BRAYNE (W. F) **Ascaris in the Bile Ducts.** [Memoranda]—*Brit. Med. Jl.* 1925 Dec. 12 p. 1122.

The following post mortem appearances following the invasion of the liver with ascarids are unusual.—

"A Chittagonian male, aged about 40, was admitted to Akyab Hospital suffering from intestinal obstruction He was jaundiced and his condition extremely bad No history could be obtained

"At the operation the colon was found to be constricted by dense adhesions in the neighbourhood of the gall bladder The peritoneum was deeply bile-stained, and the gall bladder very large

"I had just freed the colon from the adhesions when the patient's condition necessitated stopping the operation, and he died shortly after leaving the theatre. I made a *post-mortem* examination immediately The gall bladder, common bile duct, cystic duct, and hepatic duct were full of large ascarides The gall bladder was greatly dilated, the ducts slightly so On making a section through the liver numerous large ascarides were found in the bile ducts The cut liver presented an extraordinary appearance; two or three worms had been cut across, but some six or eight live worms were peeping out from the cut end of the bile ducts on each side of the incision

"There was no fistula of the gall bladder Unfortunately, the attempt to preserve the specimen *in statu quo* failed, as the worms crawled out of the ducts when the liver was put in formalin"

R. T. L.

OGATA (Seiji). **The Destruction of Ascaris Eggs.**—*Ann. Trop. Med. & Parasit.* 1925. Sept. 30. Vol. 19. No. 3. pp. 301–304.

Ogata finds that hot water is an excellent medium for the destruction of Ascaris eggs—one second at 75° C., 10 at 70° C., and 10 minutes at 65° being required to kill them. Temperatures of 60° and lower were not effective. The power to develop, however, seems to be lost after immersion for one second at 70°, two at 65°, five at 60°, 50 seconds at 55° and 45 minutes at 50°.

T. W. M. C.

ISOBE (M.). **Some Findings from Investigations on Ascaris and Ascariasis.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1925. July. No. 244. English summary p. 5. [In Japanese.]

(*a*) Irregular brown or greyish-black cicatrices are often found on the bodies of *Ascaris lumbricoides* and *A. suilla,* especially on the lateral lines or in the anterior or posterior third of the body, and are apparently caused by some mechanical injury. In about 699 females they occurred in 152 cases and in 412 males in 70 cases.

(*b*) In vegetables produced in the suburbs of Taihoku the author found 13 fertilized eggs of Ascaris on one spinach plant, two eggs containing larvae and one fertilized egg in an onion, and one larva-containing egg and a fertilized egg in a big cabbage.

(*c*) Santonin is not only a better anthelmintic but is economically cheaper than the active principle of *Digenia simplex.*

R. T. L.

OHBA (Tatsunosuke). [**Experimental Studies on the Morphological Changes of the Blood in Ascariasis.**]—*Taiwan Igakkwai Zasshi* (*Jl. Formosan Med. Soc.*). 1925. Mar. No. 240. [Summarized in *Japan Med. World.* 1925. Aug. 15. Vol. 5. No. 8. p. 224.]

In experimental animals haemoglobinic anaemia developed in 46 per cent. but in no case was there erythrocytal anaemia. In 83 per cent. leucopenia developed within 1–5 days. In 3–9 days there was a temporary leukaemia when the number of the leucocytes attained twice the normal (in 62 per cent. of all the experimental animals).

75 per cent. of the cases of leucopenia was due to the numerical decrease of pseudo-eosinophiles. Leukaemia was seen also to be due to this kind of leucocyte. Lymphocytal leucopenia developed in 60 per cent. of the fatal cases. The blood features did not return to normal until about 40 days. Similar changes followed the injection of body fluid of ascaris or an emulsion of ascaris body, but in these cases the reactions were much slighter and lasted a much shorter period.

R. T. L.

KOINO (Shimesu). [**On the Distribution of Ascarid Larvae in the Lungs during the Transmigration through the Animal Bodies.**]—*Tokyo Iji-Shinshi* (*Tokyo Med. News*). 1925. July. No. 2428. [Summarized in *Japan Med. World.* 1925. Sept. 15. Vol. 5. No. 9. pp. 252–253.]

In experimental infections on the mouse the ascaris larvae occupy mostly the more superficial layers of the lung tissue and rarely the more central regions. They are found more commonly where the capillaries are straight than where there are crooked capillaries. The author failed to induce the experimental occurrence of ascarid nephritis reported by YOKOKAWA.

R. T. L.

OHBA (Tatsunosuke). [**On the Frequent Occurrences of the Ascarid Larvae in the Urine during the Initial Stage of Ascarid Infection and on its Duration in the Experimental Ascariasis.**]—*Tokyo Iji-Shinshi* (*Tokyo Med. News*). 1925. June. No. 2425. [Summarized in *Japan Med. World.* 1925. Aug. 15. Vol. 5. No. 8. p. 219.]

Ascaris larvae appear in the urine 15 hours after infection, and the numbers present reach the maximum on the 5th–6th day, continuing until the 8th–9th day when experimental animals usually die.

R. T. L.

SUYEMORI (Susumu). **[On the Ophthalmic Changes in an Early Stage of Ascariasis.]**—*Taiwan Igakkwai Zasshi* (*Jl Formosan Med. Soc*). 1925. Feb No 239 [Summarized in *Japan Med World.* 1925. July 15 Vol 5 No 7 p 192]

In guineapigs and monkeys fed experimentally with ascarid larvae the author found in many cases that the larvae invaded the ophthalmic tissues, especially Harder's glands (in guineapigs), choroid, etc, as well as the ophthalmic nerve and the retina In these tissues the larvae occurred both in the blood capillaries and in the tissues When wedged amongst the tissues they were surrounded by cell infiltration or even haemorrhage In the retina there were haemorrhagic foci

R. T. L

MUTO (Masatomo) & SASAKI (Narinobu) **[Clinical Experiments on Digeratin, an Anti-Ascarids.]**—*Aichi Igakkwai Zasshi* (*Jl Aichi Med Soc*) 1925 Jan Vol 32 No 1 [Summarized in *Japan Med World* 1925 Aug 15 Vol 5 No 8 p 223]

Santonin when administered alone is found to have a weak action on Ascaris By combining with Santonin a preparation of *Digenia simplex* called Digelaxin the authors obtained greater success

R T L

LEDIARD (H. A) **Ova of Oxyuris in the Appendix.**—*Edinburgh Med Jl.* 1925 Nov. N S Vol. 32. No 11 pp 762–763 With 1 text fig.

This note accompanies the photo of a section of an appendix in which there was no outward evidence of abnormality. The section shows amongst the contents of the lumen about ten oxyuris eggs There was no other indication of disturbance within. The patient was a youth of 21 with tenderness elicited by pressure in the right iliac fossa, and this is stated to have been due to some cretaceous glands lying beneath the appendix.

R. T. L

AKAOI (Katsuwo) **[Biological Studies on Oxyuris.]**—*Nissin Igaku* (*Progress in Med*) 1925 Mar Vol 14 No 7 [Summarized in *Japan Med. World* 1925 Sept 15. Vol 5 No 9 p. 253]

Oxyuris eggs hatch and develop in gastric juice and in pancreatic juice, but the presence of bile seems to inhibit their development They cannot resist soap Infection follows the swallowing of mature eggs. The larvae do not require an intermediate host, nor do they enter by the skin or circulate through the lung. The Oxyuris develops from the larvae to adult in the large intestine There are two ecdyses in the growth of the larvae Even if a mature worm shed eggs in the upper part of the large intestine these could never attain full development without first passing out of the body.

R T L

MAURER (E.). Ueber Versuche mit einem neuen Wurmmittel "Helminal." **[Trial of Helminal, a New Anthelmintic.]**—*Muench. Med. Woch.* 1925. Oct 23. Vol 72. No. 43. p. 1840 [3 refs]

The author treated 80 children infected with oxyuris by means of Helminal, a preparation of *Digenea simplex.* They were given 2–3 tablets daily for five days, on the first three days a decoction of garlic in the evening, and on the last two days castor oil. Every precaution was taken to obviate re-infection by careful washing of the hands after going to stool and before meals, the wearing of special clothing and the use of white precipitate ointment in the rectum at bedtime to destroy any ova. There were no ill effects nor has the drug any objectionable taste. 70 per cent. of those treated were apparently cleared of infection, no worms or ova being found at examinations carried out for 20 days after treatment. The author, therefore, regards Helminal as a valuable medicament for oxyuriasis, though the maintenance of cleanliness and prevention of reinfection will be a difficulty with many children.

H. H. S.

Hartmann (Arthur). Zur Oxyurenbekämpfung. [**Measures against Oxyuris.**]—*Deut. Med. Woch.* 1925. Oct. 30. Vol. 51. No. 44. p. 1836.

The author has previously advocated the use of a cellulose material soaked in alum and formaldehyde for oxyuriasis. He compares it now with a preparation, Oxylax, given internally to attack the worm in the bowel. This substance is a mixture containing jalap and other purgatives taken for 20 days in a dose sufficient to produce two loose motions daily. It is maintained that the former is preferable because, by allaying the itching, there is not the same danger of reinfection by fingers soiled by scratching.

H. H. S.

Bucholz (C. Hermann). Zur Behandlung des Oxyuriasis mit Oxylax. [**Treatment of Oxyuriasis with Oxylax.**]—*Deut. Med. Woch.* 1925. Nov. 13. Vol. 51. No. 46. pp. 1914–1915. [1 ref.]

Two cases of oxyuriasis are related, in the first of which infection was very heavy, the stool sometimes being " white with worms." The patient was a boy of seven years, pale, thin, without appetite and unable to sleep owing to irritation caused by the worms. He had undergone varied treatment without effect for years. With local cleanliness and the administration of Oxylax the condition rapidly cleared. Appetite improved, he put on 3 kgm. in 9 weeks, slept well, and no worms could be found in the stool. The infection seems to have been permanently cured. The second was equally fortunate in spite of the fact that the patient, a girl of 15 years, was suffering from paralysis the result of tuberculous spinal mischief. [No mention is made of the doses given or the length of the " course."]

H. H. S.

Knoller (Gabriel). Behandlung der Oxyuriasis mit Cupronat. [**Treatment of Oxyuriasis with Cupronat.**]—*Deut. Med Woch.* 1925. Vol. 51 No. 40. p. 1664.

Butolan and Cupronat are the remedies most in vogue in Germany for the treatment of oxyuris infections. The latter is less than half the price of the former, but its use has been limited owing to the nausea and vomiting which resulted, probably from the high content of copper. A preparation is now obtainable in which this element is much reduced, and good effects without any objectionable symptoms are recorded from the following doses:—For children under 4 years of age half a tablet [strength not stated] thrice daily for 5 days; between 4 and 10 years a whole tablet; above this age one tablet 4 or 5 times daily. After an interval of 3–4 days the course is repeated. As adjuncts an aperient and enemata of garlic or alum are employed.

H. H. S.

WERNER (Heinrich). Ueber chronische Trichinose. [**Chronic Trichinosis.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 428–434. [12 refs.]

An outbreak of trichinosis in Berlin in 1918 affecting 20 persons and observations thereanent form the subject of this interesting paper. The author did not see them in the very early stages, but for months and even years he has had some of them under observation. General muscular pains have been very severe and in some continued for fully three years. There was some wasting, partly due to the number of fibres involved, partly to disuse of the muscles from the pain produced by movement. He thinks that several cases of so-called chronic muscular rheumatism may be due to trichinosis (WENDT records the case of a patient suffering thus for five years in which he proved Trichinella to be the cause). Another symptom noticed in some was cramps and twitching of the muscles of mastication and those supplied by the facial nerve. Diagnosis is best made by examination of fibres excised from affected muscles; X-rays are also of service, aided by the determination of eosinophilia (5–20 per cent.) in the blood, while local eosinophilia is also present in the tissue excised. Complement-fixation (carried out by STRÖBEL in 1911, and later by STRAUSZ) may be of use. Treatment is generally of no avail, though courses of baths, as at Wiesbaden, have benefited some of the author's patients.

H. H. S.

NISHIGORI (Masao). **On the Life History of** *Hepaticola hepatica.* (**Second Report**).—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc Formosa*), 1925. Oct. 247. English summary pp. 3–4. With 8 figs. on 1 plate. [In Japanese.]

The author in an English abstract states that the paper contains notes on the development of the eggs, a further account of the migratory course and later development of the parasite in the definitive host and a description of the pathological changes at various stages of infection in the liver.

The large eggs repeatedly reported from the liver of rats are degenerated stages of ordinary eggs. The eggs are deposited on the liver parenchyme and are not excreted nor do they normally appear in the faeces. The eggs require from 25 to 28 days to develop at 33–34° C. In the early stages of infection some larvae migrate by the blood circulation to the lungs and thence may reach the brain, kidney or other organ, but the chief course is from the intestine to the liver by the portal system, but some after piercing the gut wall may enter the liver from its surface.

27–28 days after infection egg laying adults are to be found in the liver.

The pathological changes in the liver consist chiefly in an increase of connective tissue surrounding masses of eggs. When the infection is heavy, general cirrhosis may supervene and the host finally dies.

In severe artificial infections the rats show signs of diarrhoea, dyspnoea and congestion of the liver and die in 4 to 5 days. These phenomena indicate severe toxic effects. *Hepaticola hepatica* can invade guineapigs and rabbits but do not reach maturity in these animals. The cat cannot be experimentally infected, but in the dog infection is readily induced. In this animal, however, the increase in the connective tissue is slight and much lime is deposited. The liver cells are slightly atrophied and show degenerative changes.

R. T. L.

BAYLIS (H A.). **Some Notes on Nematode Parasites found by Dr. Wassink in Rats and Mice.**—*Jl. Trop. Med. & Hyg.* 1925. Sept. 1. Vol. 28. No. 17. pp 316–317. [3 refs]

Hepaticola hepatica is recorded from the anterior portion of the stomach in rats in Holland.

T. W. M. C.

LANE (Clayton). **The Mass Diagnosis of Ankylostome Infestation. Part XIV.—Criticisms, Constructive and Otherwise.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. June 18. Vol. 19. No. 3. pp. 156–176. [8 refs.]

In this paper, presumably the last of the series, the author deals with various criticisms which have been made on the value and efficiency of his Direct Centrifugal Floatation (D.C.F.) method of Mass Diagnosis of Ankylostome Infestation, which also subserves the end of estimating the degree of infestation. It is impossible in the space allotted to deal with each point in detail, much as we would like to do so. Only the most important, therefore, can be considered.

The first objection noted is that the method " is unreliable in diagnosing Ascaris infection . . . and is unreliable for trichuris eggs." This is dealt with by the author in a subsequent part of the present paper, but it hardly seems to be a fair criticism, seeing that the D.C.F. is for the determination of *Ankylostome* infestation. It is shown, however, that by using a medium with a specific gravity in the neighbourhood of 1300 the technique is quite reliable, in fact more so than the others with which it has been compared, the Willis or the Stoll methods.

Calculations and comparisons are based on the " minimum normal ovum content," by which is meant the number of ova found per cc. of stool when a single female is normally ovipositing, and this is shown to be 30 or thereabouts.

Other objections which have been raised are : (1) That the method cannot be accurately worked by the average native assistant ; (2) That it cannot advantageously be used away from fixed centres. Both these are contradicted by statements made by others who have tried all the methods independently, while the objection on the score of economy is similarly controverted, if the preliminary cost of the apparatus be set against the permanent greater efficiency ; (3) That unless specimens can be examined in 48 hours the floatation methods are useless (the critic is speaking of the South Seas and the need for refrigeration). It is shown that so long as the temperature is kept below 80° F. the D.C.F. method is effective for weeks, in fact, " faeces collected in India could be reported on accurately after examination in London" ; (4) that the Willis method is several times more rapid than the Clayton Lane method. The actual time occupied in the estimation, after making the proper suspension necessary in all methods, is proved to be less by the latter than the former; (5) that when the content of ova is very high, more than 1,000 per cc., accurate counting is impracticable, using 1 cc. of the faeces as best to minimize uneven distribution of ova. This objection has very little weight, seeing that after this amount has been taken, aliquot parts can be employed and the estimation be made accurately, the total being calculated accordingly.

The affirmation that the Willis technique is more accurate in demonstrating ova of Ascaris and Trichuris is shown to be erroneous provided that the menstruum is brought to the proper specific gravity. In a sentence, the author, after judicially considering the various objections and criticisms which have been advanced against his apparatus and method, proves that his D.C.F. method is practical, more accurate and, therefore, more reliable than any of the concentration techniques hitherto brought forward.

H. H. S.

GORDON (R. M.). **The Effect of Ancylostome, Ascaris, and Trichuris Infections on the Health of the West African Native.**—*Ann. Trop. Med. & Parasit.* 1925. Dec. 16. Vol. 19. No. 4. pp. 429–460. With 2 figs. on 1 plate. [29 refs.]

This article is of great interest and serves as a refreshing counterblast to exaggerated records of the dire evils of hookworm infestation. The author carried out elaborate investigations with a view to determine the effect of the three worms mentioned upon the West African male native, physically and mentally. He demonstrates that the result on the haemoglobin percentage may be nil; in fact, one group with higher Hb reading actually contained a higher average degree of infection than another with lower reading, and about two-thirds of the heaviest infections and two-thirds of the negative cases fell into the higher Hb. group. There would seem, therefore, to be no correlation between the intensity in the individual and the Hb. reading.

Analogous findings were obtained as regards physique and general fitness. Individuals with heavy infection did not necessarily show a low standard. Two photographs illustrative of the general physical condition of 6 boys taken at random from negative or lightly infected cases and of 6 taken from those most heavily infected are reproduced, and the general appearance of the latter is better than that of the former.

Thirdly, mentality, as gauged by mental alertness and ability to learn. No relationshp could be established between the degree of infection and mentality. Of the 10 most heavily infected 6 were relegated to group B and 4 to group C (none to group A), whereas amongst the non-infected there were 26 per cent. in group A, 35 in B, 39 in C; in other words, those classed in group C were practically the same proportion amongst the non-infected as amongst the most heavily infected.

With regard to energy, that is " the keenness with which an individual attempts any mental or physical task allotted to him." Here the percentage of infected cases in each group increases with each reduction in the standard of energy, so that there is an indication of some connection between intense infection and a lowered standard of energy.

The number of individuals dealt with was small (137 for hookworm and 89 for Ascaris and Trichuris), and we must guard, therefore, against applying such happy results too generally, especially in view of the vast number of contrary statements. On the other hand, to the presence of hookworm has been ascribed almost every evil in the tropics, from rheumatism to nyctalopia, and therefore some evidence on the more cheerful side is welcome. The author finally states that before treatment, especially before "mass treatment," is applied to any native race, careful investigation as to any definite pathogenic effects of ankylostomiasis upon that race should be made and, if any are noted, with what degree of infection they are associated.

H. H. S.

LEGER (Marcel). L'ankylostomiase dans les colonies françaises. [**Ancylostomiasis in the French Colonies.**]—*Ann. de Méd. et de Pharm. Colon.* 1925. Jan.–Feb. Mar.–Apr. Vol. 23. No. 1. pp. 81–101.

A survey in more or less general terms of the prevalence of hookworm infestation in the French colonies from the beginning of the century, with occasional references to even earlier times. Much research into the literature and considerable ingenuity must have been needed to compress into 20 pages the reports of numerous investigators during the period, but these records are now of little more than historical interest until they can be compared with those of more recent prevalence.

H. H. S.

SMILLIE (W. G.) & AUGUSTINE (D. L.). **Intensity of Hookworm Infestation in Alabama. Its Relationship to Residence, Occupation, Age, Sex and Race.**—*Jl. Amer. Med. Assoc.* 1925. Dec. 19. Vol. 85. No. 25. pp. 1958–1963. With 5 charts in text. [5 refs.]

By means of a careful study of hookworm infestation in respect of residence, age, sex and race, the authors show that the important factor in control is not the incidence, but the intensity of infestation. In other words, distinction must be made between "hookworm carriers" and those with "hookworm disease." Infestation of sufficient intensity to constitute an economic factor in the lives of the people in Alabama is demonstrated to be limited to those living in rural districts on scattered farms. Further, stress is laid upon the fact that hookworm infestation is slowly acquired and slowly lost, and that the mere wearing of shoes may be the determining factor between severe disease and light infestation. The sexes are equally attacked in childhood and, as both boys and girls begin to wear shoes at about the same age, both sexes have an equally low intensity in adult life. In studying the effect of race the Southern States form an ideal site, because conditions are favourable to high intensity of infestation. The authors' investigations have shown that when the two races are living under almost identical conditions of sanitation, economic status, occupation, soil, temperature, etc., the white may be highly infested, the negro very slightly. From these findings it is arguable that true hookworm disease as an economic menace to the people in Alabama is limited to the rural white children of school age. It follows also that hookworm treatment should not be given indiscriminately to every person whose stools contain ova, but that it should be employed as a weapon to combat and control true hookworm disease. Finally, in dealing with the question as it affects the southern United States all that is needed is, firstly, to control the carrier by installing proper sanitary toilets throughout the rural areas and education of the people regarding the mode of infestation, and, secondly, to limit treatment to actual cases of hookworm disease in rural white school children.

H. H. S.

HOWARD (H. H.). **Study in Hookworm Infestation in Jones County, Mississippi, 1924.**—*Southern Med. Jl.* 1925. Sept. Vol. 18. No. 9. pp. 668–672. [5 refs.]

In 1914 hookworm infestation in Jones County was found to be 82·5 per cent.; in 1924 it was 75·8 per cent. Female children had lower infections than male (70·9 per cent. and 80·5 per cent.), and younger children fewer eggs than older. Sanitary conditions are not yet satisfactory.

T. W. M. C.

CORT (W. W.), GRANT (J. B.) & STOLL (N. R.). **Hookworm Disease in China. A Preliminary Report.**—*Nat. Med. Jl. China.* 1925. Aug. Vol. 11. No. 4. pp. 282–297. With 1 text fig.

This is a preliminary report of the China Hookworm Commission which worked from June, 1923, to November, 1924, under a grant from the Rockefeller Foundation. No evidence has been found that hookworm disease is a public health problem in North China, and the writers consider that the low rate of infestation in that area is chiefly due to adverse climatic conditions, as other conditions favour its spread. In Central and South China, however, there are several well-defined areas where the disease is important. There, not only are the climatic conditions favourable to its spread, but the use of night soil as fertilizer actively disseminates the eggs. Experiments showed that in summer one month's storage of this fertilizer sufficed to kill 90 per cent. of the eggs; while the addition of 1 : 10 to 1 : 100 parts of lime destroyed all eggs in 6 to 12 days. Workers in some mulberry groves were found to be heavily infected, the infection taking place at the second picking of the leaves in June or July. After the first picking, the trees are heavily manured, often with *fresh* night soil, and the ground then becomes heavily contaminated. The writers suggest that the substitution of commercial fertilizer—as is done in other parts of China—would prevent the disease.

T. W. M. C.

CHRISTOPHERS (S. R.). **Part II. Enquiry on Malaria, Blackwater Fever and Ankylostomiasis in Singhbhum. Report No. 1.**—*Indian Jl. Med. Res.* 1925. Oct. Vol. 13. No. 2. pp. 363–405. With 6 maps & 4 figs. on 1 plate.

This is a brief record of incidental examinations carried out in the course of malarial surveys. Of 50 examined one had an infection of 7,000 ova per gramme of faeces, 2 between 1,000 and 2,000, 8 between 100 and 500, 7 under 100, and 18 were negative.

Of 17 specimens of faeces taken from dry situations 12 contained ova with an average of 365. Of 30 from moister situations 20 were positive with an average of 690. It appears that the danger of any particular ground can be told from examination of faeces found upon it.

H. H. S.

CHANDLER (Asa C.). **The Epidemiology of Hookworm and Other Helminth Infections on Assam Tea Estates.**—*Indian Jl. Med. Res.* 1925. Oct. Vol. 13. No. 2. pp. 407–426. With 1 map. [13 refs.]

The author carefully studied the conditions on the Moheema Tea Estate, Assam, where hookworms were rife, to determine the main factors in the spread of the disease. The incidence was found to be over 90 per cent., but soil pollution was practically limited to defaecation-sites. During work the coolies did not visit any special place, but merely squatted between tea-bushes a little distance from their fellow-workers. The usual defaecation-sites, used at other times than working hours, were 50–75 yards from the dwellings. The former source is probably an important one, since larvae on such a site are numerous, and the picker standing long enough, say 4–5 minutes, on heavily infected soil would be much exposed to larval penetration. The larvae are not carried to any distance, for the paths in the vicinity were found but lightly infected.

As regards climatic conditions: At no season is the temperature likely to prohibit the development of hookworm larvae, but the rainfall is such that from October to March the ground becomes so dry that infection is reduced practically to nil. To prevent surface soil infestation a layer of thatch 6 inches thick proved very effective, the larvae being found in fair numbers only close to the underlying earth even in rainy times. Also, the ordinary drainage trenches, which are 2–3 ft. deep and 9 inches wide, are more than sufficient to prevent migration of larvae. It was found that whereas samples taken from the bottom of a 2-ft. deep trench yielded 120–500 larvae, at a distance of 3–8 inches above the bottom only 2 were found, and only 1 in 5 samples taken from above this level. Hence, if the coolies could be persuaded to use these trenches instead of the surface of the ground the dangers and chances of infection would be much reduced.

H. H. S.

WILDMAN (OTIS) & BETTS (N. S.). **Hookworm Disease in Navy Recruits—its Diagnosis and Treatment.**—*U.S. Nav. Med. Bull.* 1925. Sept.–Oct. Vol. 23. Nos. 3 & 4. pp. 241–248. With 1 chart in text.

Hookworm was found in 23·3 per cent. of 15,929 incoming recruits for the U.S. Navy from the Southern States. The paper sets out in detail the procedures employed. In about one-third of the cases the Bass centrifugal method of detection was used, but it was replaced later by the Barber method to facilitate the work, although the latter procedure gave a slightly lower percentage of positives. The incidence varied from 4·4 per cent. in Maryland to 43·5 per cent. in Florida. One dose of 3 cc. of carbon tetrachloride caused the hookworm ova to disappear from the stools in over 96 per cent. of cases. The authors are of opinion that carbon tetrachloride, if properly administered, is essentially harmless and gives a higher percentage of cures at much less inconvenience to the patient than any other known form of treatment. It is very important to attend to the following points :—

1. Be sure that the drug is chemically pure and is given on an empty stomach.
2. Do not give more than 3 cc. to a full-grown adult.
3. Grade the dosage to some extent in relation to body weight.
4. Administer magnesium sulphate simultaneously with the drug.

R. T. L.

ROBERTS (F. L.). **Vital Capacity of Children Infected with Hookworm.** *Amer. Jl. Public Health.* 1925. Sept. Vol. 15. No. 9. pp. 774–780. With 7 text figs. [6 refs.]

Studies such as this should subserve some useful end on account of the labour involved, but the carrying out of the examinations is one thing, evaluation of their results another, and requiring, apparently, the help of expert mathematicians. 1,000 children between the ages of 6 and 18 years were selected, all found to be harbouring hookworm. The standard deviation was computed, that is, the approximate limits within which measurements obtained are more likely to be normal, by means of the formula $\mathrm{S.D.}=\sqrt{\frac{\mathrm{Sd}^2}{\mathrm{N}}}$, where Sd^2 is the sum of the squares of the deviants and N the number of observations Thereafter the probable error is gauged by the formula $\mathrm{P.E.}=0\cdot6744898\ \frac{\mathrm{S.D.}}{\sqrt{\mathrm{N}}}$, and the body-surface by the formula of Du Bois and Du Bois whereby the area in sq. cm. $=\mathrm{Wt.}^{0\cdot425}\times\mathrm{Ht}^{0\cdot726}\times71\cdot84$.

By means of these and several other calculations the author concludes that hookworm does not materially decrease the vital capacity of the child population between the ages taken, nor does under-weight for height, when the group is considered as a whole, though it might do so when considered in relation to the surface area of the body. Apparently in this study the severity or degree of infection was not taken into account. If this is done, presumably the calculations will become really complicated.

H. H. S.

SAWYER (Wilbur A.). **Factors that influence the Rate of Increase of Hookworm Infection.**—*Amer. Jl. Hyg.* 1925. Nov. Vol. 5. No. 6. pp. 790–817. With 5 charts in text. [13 refs.]

In this article is presented yet another of the theses devoted to applied mathematics which are becoming a common feature of Ankylostome campaigns abroad. Having noticed that after thorough treatment of a community for hookworms there was a rapid rise, particularly during the succeeding year, towards the original degree of infection, the author, in what he correctly denominates a " somewhat speculative " discussion, attempts to show [the author's own words] :— (1.). That the rate of increase is determined largely by the ratio of the number actually present to the number which would be present at equilibrium. (2.). That, with constant environmental conditions, the rate of increase of hookworms rises with decrease in the density of the hookworm population. (3.). That the conditions affecting hookworms and their larvae . . . determine the level of equilibrium of the intensity of infection . . . at this point the number of worms acquired equals the number lost. (4.). That the rise in the rate of increase of hookworms with diminishing density of population [of hookworms] make it desirable to plan operations to reduce the level of equilibrium. The level of equilibrium may be taken as an index of the combined effect of complex environmental conditions.

By subsequent mathematical ingenuity the author shows, with the help of three assistants, how the above aims may be carried out by the aid of Life Tables, Birth and Mortality statistics for hookworms, based on the analogy of a fruit fly, *Drosophila melanogaster.*

H. H. S.

KORKE (Vishnu T.). **Observations on the Life History of Hookworm in Nature.**—*Indian Jl. Med. Res.* 1925. Oct. Vol. 13. No. 2. pp. 301–320. With 1 plate. [8 refs.]

This article comprises three separate studies. The first records the results of an investigation undertaken to determine the effect of physical conditions of the soil on the life-history of the hookworm in nature. Various types of soil were selected and an unpolluted plot of ground, ascertained to be such by repeated examination. This was then fenced in and a morning stool deposited upon it. At 24-hour intervals the physical character of the stool was noted and the number of ova counted, those containing larvae separately from those without, and the results expressed as numbers per gramme of faeces. It was found that unshaded ground covered with grass and vegetation was most favourable to development of larvae (such ground is commonly used for cultivation). The observations also indicated that it might be possible to select a type of defaecation ground on which the larval stages of the worm could be controlled.

The second study is of the effect of general physical conditions on the morphological characters of the larvae, and it is shown that two kinds of larval growth are met with, the well-nourished and the starved, the latter being noted in growths of long duration.

Thirdly, an attempt was made to establish certain morphological characters to distinguish the larvae of *A. duodenale* from those of *N. americanus.* No human case infected by the former alone being available, the author employed cultures from the faeces of dogs with *A. caninum.* It was found that the situation of the genital primordium is nearer the oesophagus in Necator, and that the expansion of the base of the buccal cavity is present in larvae of *A. caninum* but not in *N. americanus.*

H. H. S.

LINDTROP (Harry). **Die endemischen Brutstätten der Ankylostomiasis in Transkaukasien.** [Endemic Breeding Grounds of Ankylostomiasis in Trans-Caucasus.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Nov. 6. Vol. 29. No. 11. pp. 666–668. [3 refs.]

When examining films of blood, as a member of the Malarial Expedition to the Trans-Caucasus, the author was struck by the number exhibiting eosinophilia. The average was 5·2 per cent., and some had as many as 30 per cent. He therefore examined the faeces of patients attending the University clinic, 130 in all, and found that 98·5 per cent. had Trichuris, 39·5 Ascaris, 22·5 Oxyuris, 7·2 Ancylostoma, 8·9 *Taenia saginata*. Most of those harbouring hookworm were from the low-lying rice-fields by the Caspian Sea or the southern wooded parts of Lenkoran. Later, 47 more specimens were brought from Sakalaty, and 18 of these contained Ancylostoma ova.

H. H. S.

SWEET (W. C.). **Average Egg Count per Gram per Female Hookworm in Ceylon.**—*Jl. Parasit.* 1925. Sept. Vol. 12. No. 1. pp. 39–42. [3 refs.]

The writer considers that an "Infection Index" using Stoll's factors would be applicable to Ceylon. After allowing for several sources of error, Sweet finds that the number of eggs per gram of faeces per female hookworm is 25·6.

T. W. M. C.

SVENSSON (Ruth). **Observations in the Development and Longevity of Hookworm Larvae in Different Temperature Conditions.**—*China Med. Jl.* 1925. Aug. Vol. 39. No. 8. pp. 667–673. With 4 charts in text. [2 refs.]

This is a description of experiments designed to compare the length of life of the larvae of *Necator americanus*, *Ancylostoma duodenale* and *A. caninum* in soil cultures exposed to different conditions of temperature.

1. One set was kept at incubator temperature, about 34° C., to simulate that of a tropical summer. *N. americanus* and *A. caninum* hatched out in much higher percentage than *A. duodenale*, but the larvae of the human species remained alive for 15 and 17 weeks respectively.

2. Another set was placed in the incubator each day for 17 hours and for the remaining 7 hours at room-temperature, to simulate summer in a subtropical region. It was found that the larvae were less resistant than with the constant higher temperature of the incubator.

3. A third set kept at room-temperature, about 24° C. average, resembling that of summer in a temperate climate. This proved to be the optimum for *A. duodenale*.

4. At room-temperature 17 hours and in an ice-box 7 hours daily, varying between 8° and 22·5° C. *A. duodenale* and *N. americanus* showed a low percentage of hatching under these conditions, though, once hatched, they remained alive for a considerable time. *A. caninum*, however, showed a very high degree of hatching and a long life, 6·3 per cent. for more than 15 weeks.

5. In the ice-box at about 8° C. No larvae developed, and after a week the culture was transferred to room-temperature, but the eggs had been killed. Larvae, however, which had hatched at room-temperature were able to withstand ice-box temperature, *N. americanus* for 5–6 weeks, *A. duodenale* for 11–13 weeks, *A. caninum* for more than 15 weeks.

H. H. S.

YOKOKAWA (Sadamu) & OHISO (Tomiaki). **[Studies on the Life History of the Ancylostoma and** ***Strongylus stercolaris.*** **Communication III. On Per Os Infection of the Human Ancylostoma.]**—*Tokyo Iji-Shinshi* (*Tokyo Med. News*). 1925. Sept. No. 2439. [Summarized in *Japan Med. World.* 1925. Nov. 15. Vol 5 No. 11. p 320.]; also in *Taiwan Igakkai Zasshi* (*Jl. Med. Assoc of Formosa.*) 1925. Sept. No. 246. English summary pp. 3–4. [In Japanese.]

When mature larvae of *Ancylostoma duodenale* are given by the mouth to various experimental animals they take one or other of two different courses according to the species of the experimental animal If given to guineapigs, rabbits or mice, they mostly penetrate into the wall of the alimentary canal. If given to dogs, the majority are quickly voided with the faeces, a small number of them remain in the gut and develop to a certain degree, but are also gradually evacuated Comparing these results with *A. caninum*, it becomes highly improbable that the larvae of *A duodenale* should undergo any migration if ingested by the mouth by man, the proper host. The authors conclude that pulmonary migration does not exercise any special influence on the development of the larvae, and that the passage of the larvae through the lungs after skin infection is merely an inevitable consequence of the anatomical conditions.

R. T. L.

i MIYAGAWA (Yoneji) **[Criticisms on Yokokawa and Ohiso's Work " A Study on the Development of the Ancylostoma and** *Strongyloides stercolaris* **Communication I. On the Route of Infection of Ancylostomum."]**—*Tokyo Iji-Shinshi* (*Tokyo Med News*) 1925 June No 2424

ii YOKOKAWA (Sadamu) & OHISO (Tomoaki) **[Studies on the Development of the Ancylostomua and** *Strongylus stercolaris* **Communication II. On the Per Os Infection from the Ancylostom. (A Secondary Communication).]**—*Ibid* No 2425 [Both papers summarized in *Japan Med World* 1925 Aug. 15 Vol 5 No 8 p 219]

i The author criticizes the view of YOKOKAWA and OHISO (see this *Bulletin*, Vol 22, p 891) that the larva of ancylostoma may attain full development in the gut without first passing through the respiratory organs

ii The authors report experimental cases (not summarized in the English abstract of the Japanese text) and still sustain their opinion

R T L

ASADA (Junichi) **[Studies on the Development of Ancylostoma, with Special Reference to the Meaning of Per-Os Infection.]**—*Tokyo Iji-Shinshi* (*Tokyo Med News*) 1925 Sept No 2438 [Summarized in *Japan Med World* 1925 Nov 15 Vol 5. No 11 p. 320]

" Immature " encysted ankylostome larvae always take the pulmonary route before reaching maturity in the intestine, but mature larvae or Looss' so-called perfect encysted larvae do not necessarily take such a course, but can infest the intestines.

R T. L.

BACIGALUPO (J.). L'auto-infection est-elle possible dans l'ankylostomose? **[Is Auto-infection Possible in Ancylostomiasis.]**—*C. R. Soc. Biol.* 1925. Oct. 23. Vol. 93. No. 29. pp. 966–967.

The fact that a child who was in hospital for three years was found to be passing ova of hookworms and that three courses of treatment at intervals led to the expulsion of 31, 7 and 1 worm respectively is used as an argument in favour of auto-infection The author states that he has met with similar cases before and that beneath the nails of one patient he found an ovum in evolution and two motionless larvae.

H. H. S.

YEAGER (Clark H.) & KIRK (J. Balfour). **The Treatment of Hookworm Infection with Moderate Doses of Carbon Tetrachloride and Oil of Chenopodium.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Oct. 15. Vol. 19. No. 4. pp. 240–248. [5 refs.]

As has been repeatedly stated, carbon tetrachloride is very effective against Necator, but not against Ascaris. Though oil of chenopodium acts against both, it is less effective against the former than is the tetrachloride, and it also takes longer to act. The toxic effects are negligible if a mixture is freshly made up and the dose within reasonable limits. It is usual, when giving the tetrachloride alone, to administer the full dose at once; combined with chenopodium it is better in divided doses, so that, should toxic symptoms from the oil occur, the second portion can be withheld. A purgative is needed, as the oil is constipating. The authors recommend 2 parts of the tetrachloride to 1 part of chenopodium, the dose being 0·1 cc. of the mixture for each year of apparent age, with a maximum of 1·5 cc. It can be given in water in equal fractions at 1–2 hours interval, and a saline purge 2 hours after the last dose.

If, in addition to hookworm, the ascaris infection is moderate, it may be better to give plain carbon tetrachloride or the mixture, as above, and 7–10 days later the treatment by plain oil of chenopodium (or ascaridol in half the dose.)

In the latter part of the paper the usual counter-indications to the use of the drugs, the signs of poisoning, and the treatment to be adopted for them are succinctly stated.

H. H. S.

YEAGER (Clark H.) & KIRK (J. Balfour) **The Employment of Carbon Tetrachloride followed immediately by Magnesium Sulphate in the Treatment of Uncinariasis.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Oct. 15. Vol. 19. No. 4. pp. 249–255. [5 refs.]

It has been recorded again and again that the simultaneous administration of a saline purgative with oil of chenopodium reduces the anthelmintic action of the latter, but the effect with carbon tetrachloride is not so established. Patients to be treated were given the tetrachloride (maximum dose 3 cc.) and immediately afterwards magnesium sulphate in the early morning, and solid food was withheld until the purgative had acted well. The stools were collected for three days and washed and the worms collected and classified. It was noted that the largest number of worms were removed from the second day's stool. Ascaris infections were practically unaffected, and not a single Trichuris was obtained. It was found that the almost simultaneous administration of purgative and anthelmintic produced no weakening of the latter, while the liability to toxic symptoms was reduced. The procedure, therefore, is good for mass treatment work; it saves much time and is more favoured by the patients in that they are not kept so long without food.

H. H. S.

HILL (Rolla B.). **Hookworm Reinfestation in Sanitated and Unsanitated Areas.**—*Southern Med. Jl.* 1925. Sept. Vol. 18. No. 9. pp. 665–668. [3 refs.]

This paper is instructive in demonstrating the necessity of combining sanitation methods with the treatment of patients when attempts are made to deal with hookworm infestation. Two areas in Porto Rico were selected, one an unsanitated part in which there were practically no latrines and soil-pollution was gross.; the other in which all houses were provided with latrines. By treatment the intensity of infection was reduced by 84 and 97 per cent. respectively. A year later a re-survey of these districts was undertaken, and it was found that in the unsanitated district 47 out of 51 examined were harbouring the worms, and the rate was as high as before treatment had been begun, but the intensity had been reduced to about half. In the sanitated district the infestation-rate had also risen, in this case to about 50 per cent., but the intensity was much less, only 12 per cent. of that of the year before.

H. H. S.

CORT (W. W.). **Notes on the Effect of Burial on Infective Hookworm Larvae.**—*Jl. Parasit.* 1925. Sept. Vol. 12. No. 1. pp. 33–38. [4 refs.]

Five-gallon oil tins were cut in half and buried in an exposed place. 100,000 to 125,000 infective hookworm larvae were deposited on the surface of the soil at the bottom of each tin. This surface was a hard packed clay. The cans were then filled to a depth of 8 inches with moist soil allowed to settle naturally. No rain fell during the period of the experiment. The daily range of temperature (Soochow, China) was from about 80° F. to 90° F.

Four of the experiments were left entirely exposed to the sun, four were constantly shaded by boards, which also greatly reduced evaporation. To two each of the exposed and covered cans enough water was added once daily to thoroughly soak the surface. The other cans received no water.

The results of examining the units which were *covered* and to which no water had been added showed that there was little stimulus to the larvae to migrate vertically, although quite a large number had worked up to 3–4 inches.

The units which were left *uncovered* and to which no water had been added showed a very great reduction in the larvae and none were found on the surface. There was very little evidence of vertical migration, but the larvae may have been killed by the drying of the soil.

In the units left *uncovered* to which water had been added daily the great bulk of the larvae were recovered from near the surface.

In this experiment the larvae, apparently, were stimulated to rapid vertical migration, and their numbers were greatly reduced by the repeated drying of the surface.

In the units which were *covered* and to which water was added daily there was a rapid and extensive vertical migration and a large recovery of larvae from the surface

These findings confirm PAYNE'S opinion that movements in the soil water are of importance in stimulating vertical migration

R T L.

BERCOVITZ (Nathaniel) **The Practical Aspects of Hookworm Control in China.**—*China Med Jl* 1925 Aug Vol 39 No. 8 pp 673–679

Largely owing to the universal use of night-soil as fertilizer, aided by the fact that latrines are practically non-existent, some 95 per cent. of the inhabitants of the Kachek region, Hainan Province, are infested with hookworms Economic considerations prevent the doing away with night-soil as fertiliser, but simultaneous treatment of large numbers of the inhabitants, repeated in six months and thereafter at intervals of about a year, would, it is believed so reduce the soil pollution that a great degree of improvement would result After the first preliminary survey it is waste of time to examine cases, apart from the difficulty of obtaining samples of faeces

For treatment of patients the author uses a mixture of 10 parts of carbon tetrachloride to 1 part of oil of chenopodium, the dose being 1½–2 drops for each year of age, with a maximum of 35 drops A saline purgative is given an hour after As the treatment cannot be made compulsory, only those who believe that there is such a disease as ancylostomiasis, and that it causes disability, will consent to take treatment , hence much educational work will be needed before the desired results are attained

H H S

MANALANG (C). **A Hookworm Campaign in Cebu.**—*Philippine Jl Sci* 1925 Aug. Vol 27. No 4 pp 483–493

This is a detailed account of a hookworm campaign in Cebu and the methods of publicity adopted The inhabitants were found to be heavily infected with hookworms, ascarids, and whipworms, and mass treatment was given 30,000 persons received carbon tetrachloride without a single fatality.

T W M C.

MEDICAL ZOOLOGY

HERMS (W B) **Parasitology as an Aid to the Medical Officer.**—*Milit Surgeon* 1925 Nov Vol 57 No 5 pp 517–528 [5 refs]

Though there is nothing novel in it, this is a most readable paper, and illustrates with much judgment the essential sanitary services that can be rendered by a medical officer who has had some training in parasitology and medical zoology

A Alcock

PAWLOWSKY (E N) Ueber Pseudoparasitismus und Xenoparasiten [**Pseudoparasitism and Xenoparasites.**]—*Rev Microbiol & Epidemiol* 1925 Vol 4 No 2 German summary p 109 [In Russian pp 1–4]

This is a paper on a subject about which there is not, and is not likely to be unanimous agreement namely exact definitions, " purged and snuffed from ambiguity " of the several grades and varieties of associated existency that can be brought into the very general concept of parasitism " The author here distinguishes " xenoparasites ' (e g , *Dipylidium caninum* in the gut of a dog) ' pseudoparasites ' (e g , maggot of *Musca domestica* in the gut of a man) and " homeoparasites ' (of which he does not give a concrete example) or organisms superficially resembling parasites but living entirely on waste or waste products of the host

A A

KESSEL (John F) **A Preliminary Report on the Incidence of Human Intestinal Protozoan Infections in Seoul Korea.**—*China Med Jl* 1925 Nov Vol 39 No 11 pp 975–982 [8 refs]

The author describes the conditions and technique of this survey, which was conducted in a Korean medical college and hospital Samples of faeces from 212 individuals were examined—153 Koreans and 59 foreigners , in 82 cases 6 examinations were made , in 47 cases one examination , in 83 cases 2 to 5 examinations The results, which are compared with a survey previously conducted by the author and SVENSSON in Peking (this *Bulletin*, Vol 22, p 832), show, as regards *L histolytica*, that infection in Koreans (41 per cent) was 8 5 per cent higher than among Chinese in Peking, and infection among foreigners (25 per cent) the same in both places (and twice as high as in Great Britain and the United States of America surveys) , and incidentally, that this infection was detected in 6 out of 9 foreigners having sprue symptoms They also shew that the incidence of Giardia (which was present in 18 per cent of Koreans) and of Trichomonas was higher in Koreans than in China Incidentally, Trichomonas was found along with *E histolytica* in the pus of a Korean case of liver abscess

A A.

THOMAS (Walter S.) & BAUMGARTNER (E. A.). **Stool Examination for Protozoa in Eleven Hundred Inmates of a New York State Institution.**—*Jl. Amer. Med. Assoc.* 1925. Nov. 28. Vol. 85. No. 22. pp. 1725–1728. With 3 charts in text. [6 refs.]

A statement of the results of a single-specimen examination of stools of 1,122 inmates of a public institution for feeble-minded women in New York, for protozoa. 44·7 per cent. were found to be infected, a certain number being multiple infections. *Entamoeba histolytica* was found in 1·07 per cent., *E. coli* in 17·83, *E. nana* in 17·74, *Chilomastix mesnili* in 21·03, Trichomonas in 0·26, and *Giardia intestinalis* in 2·4 per cent. None of the cases of *E. histolytica* infection had ever shown any evidence of amoebic disease.

A. A.

BRUYNOGHE (R.) & DUBOIS (A.). Action du radium sur des protozoaires pathogènes. [**Action of Radium on Pathogenic Protozoa.**] —*C. R. Soc. Biol.* 1925. Sept. 30. Vol. 93. No. 28. pp. 849–850. [3 refs.]

Bruynoghe having shown that trypanosomes and treponemes lose their infective powers, though not their motility, under the influence of radium, he and his colleague now show, as a result of experiments on cultures of these organisms, that this loss of infectivity is attributable to inability to divide and multiply.

A. A.

TSUCHIYA (Hiromu). **Pathogenicity of** *Trichomonas intestinalis.*—*Arch. Intern. Med.* 1925. Aug. 15. Vol. 36. No. 2. pp. 174–188. With 1 text fig. [25 refs.]

This is a comprehensive and laborious study carried out (in July–October) in the clinical laboratories of the Battle Creek Sanitarium, where the occurrence of intestinal flagellates was frequent among the inmates. The author begins with a review of the differing opinions expressed by some 18 observers as to the pathogenicity of *Trichomonas hominis*, and, after describing some methods of laboratory technique, continues with a series of summaries of the results of his various laboratory experiments and clinical observations. This record includes a tabular statement of faecal analysis (microscopic), urine analysis (albumen, sugar, casts, by-products of metabolism), blood analysis (haemoglobin, microscopic), gastric test, symptoms (gastro-intestinal, nervous, nutritional) and blood-pressure of 20 cases in which the infestation with Trichomonas was most heavy.

The author's conclusions are that *Trichomonas hominis* is a harmless inhabitant of the large intestine. Whether these flagellates are abundant or few neither laboratory nor clinical evidence conclusively warrants a pathological diagnosis. Constipation, without any history of diarrhoea, is their usual concomitant—confirmed by the proctoscope. The intestinal flora is independent of *Trichomonas hominis.*

[It is of interest to note that the conclusion drawn by CLEVELAND from his experiments upon the intestinal flagellates of Termopsis (a genus of "white ants") is that *Trichomonas termopsidis* "is undoubtedly of some value to its host as a symbiont" (*Biological Bulletin*, Vol. 48, No. 5, May, 1925, p. 319), also previous papers in April and May of the same year.]

A. A.

Szemö (Georg). Beitrag zur Frage der Pathogenität der Trichomonas mit besonderer Berücksichtigung der Wirkung von Ipecacuanha. [**Pathogenicity of Trichomonas and the Action of Ipecac.**]—*Arch. f. Verdauungs-Krankh.* 1925. Aug. Vol. 35. No. 5-6. pp. 318–324. With 1 fig. [14 refs.]

The essentials of this relate to a case of chronic diarrhoea, with faeces heavily infested with Trichomonas, having a previous history of an attack of dysentery in a latter stage of which jaundice occurred. Under treatment with ipecacuanha, "in doses customary for bronchitis," the consistence of the stools improved quickly and the Trichomonas disappeared. [No other organism is mentioned; but as it is stated that Trichomonas was looked for in the duodenum, and that Trichomonas "cysts" were not found in the faeces, one may presume that if an exhaustive search was made it was not very discriminative.]

A. A.

Reichenow (Eduard). Die Aufnahme roter Blutkörperchen durch Trichomonas. [**Ingestion of Red Corpuscles by Trichomonas.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Oct. 15. Vol. 29. No. 10. pp. 519–525. [8 refs.]

The author has studied the behaviour, in cultures, of various trichomonads from man and other animals (mongoose, macaque, chimpanzee, cat, pig), with regard to the ingestion of red blood cells. He finds that different cultures (and different animals) behave differently in this respect and that individual flagellates that have ingested red blood cells are most abundant in cultures that are rich in the five-flagellate form—Pentatrichomonas.

A. A.

Escomel (E.). Batraciens conservateurs et propagateurs de certaines flagelloses intestinales de l'homme. [**Flagellates of Man and Frogs.**]—*Bull. Soc. Path. Exot.* 1925. July 8. Vol. 18. No. 7. pp. 521–525.

In the drinking-waters of Arequipa a frog (Telmatobius) and a fish (Atherina) are common enough; and both of them have their intestinal protozoa (parasitic or commensal), which get passed into the water. Among the intestinal fauna of the frog is a Trichomonas. The frog can also be infected experimentally with *Trichomonas hominis*; and as the author regards this flagellate as a dangerous parasite to man he thinks that—if only for this reason—the frog and the fish and the organisms upon which they live should be removed from the waters used for drink.

A. A.

Lyon (B. B. Vincent) & Swalm (William A.). **Giardiasis: Its Frequency, Recognition, Treatment and Certain Clinical Factors.**—*Amer. Jl. Med. Sci.* 1925. Sept. Vol. 170. No. 3. pp. 348–364. [118 refs.]

Most of this is a summarized version of "the literature." The authors' own experience is that infestation with giardia is concurrent with disease of the biliary tract, and he therefore advocates biliary drainage and intraduodenal lavage with magnesium sulphate as the basis of rational treatment. In one of his cases here very briefly abstracted the patient had "continuous biliary drainage for 17 days, with a daily duodenal lavage with 1 to 5,000 silvol solution, sodium iodide intravenously, and hexamethylenamin by mouth." However, although the giardias disappeared after the 8th day of this treatment, they were back again 2 weeks after the drainage was stopped and were found in abundance in the patient's stools five years afterwards.

A. A.

LABBÉ (Marcel), NEPVEUX (Floride) & GAVRILA. La lambliase vésiculaire. [**Vesicular Lambliasis.**]—*Bull. et Mém. Soc. Med. Hôpit. de Paris.* 1925. Dec. 3. 3rd Ser. Year 41. Vol. 49. No. 36. pp. 1505–1511.

In the course of numerous resorts to duodenal tubage for various affections the authors have lately encountered Giardia in the bile in 7 instances. They describe these 7 cases and from them they generalize a diagnosis of "Vesicular lambliasis."

In such cases you may or may not find cysts in the faeces; if the infection be an old one and the parasites have definitely colonized the gall-bladder you probably will not. You may or may not have the symptom of vague pains about the region of the gall-bladder. What you will have is a state of things—weakness, emaciation and cachexia—suggestive of a malignant growth somewhere; a chronic and intractable dyspepsia concurrent with permanent or remittent diarrhoea; and a history, perhaps an ancient history, of a definite attack of dysentery. And what you will find, if you tap the duodenum, is a multitude of living Giardia in the bile.

It is essential that the parasites be got rid of. The authors have tried stovarsol, treparsol and other compound organic salts of arsenic with varying success. They are now using essence of turpentine since it has given good joy in intestinal lambliasis, and they intend next to give a trial to the organic tetrachlorides and tetriodides.

A. A.

CHIRAY (M.) & LEBON (J.). A propos de la lambliase vésiculaire. [**Concerning Lambliasis of the Gall Bladder.**]—*Bull. et Mém. Soc. Med. Hôpit. de Paris.* 1925. Nov. 5. Year 41. 3rd Ser. Vol. 49. No. 32. pp. 1344–1346. [5 refs.]

The authors are not convinced that *Giardia intestinalis* can infest the bile-passages even though liquid withdrawn from the duodenum by tubage be full of these parasites. They relate, in their own experience, a case of cholecystitis due to gall-stones where, although the parasites were abundant in the duodenal fluid, not a trace of them could be discovered in the gall-bladder when carefully examined after excision.

A. A.

PAPPALARDO (Concetto). Lambliasi e colecistite. [**Lambliasis and Cholecystitis.**]—*Riforma Medica.* 1925. Dec. 14. Vol. 41. No. 50. pp. 1183–1186. [22 refs.]

This is a long discussion, based upon 3 cases—which also are recorded at length—of the condition now being described by French writers as "Vesicular lambliasis"—a condition where, in cases having a certain nexus of dyspeptic symptoms and vague pains which do not necessarily designate the gall-bladder, duodenal tubage leads to the discovery that that viscus in infested with Giardia. In these 3 cases, however, rare active forms of Giardia were also observed, along with amoeba cysts, in the faeces.

A. A.

GAIVORONSKY (V.). Pathogénie lambliose. [**Pathogeny of Giardia.**]—*Rev. Microbiol. & Epidémiol.* 1925. Vol. 4. No. 2. [French summary pp. 111–112. In Russian pp. 43–49.]

In this summarized clinical record of 76 instances of disorder and disease of the abdominal viscera (chiefly liver, gall-bladder, and gastro-intestinal tract) the presence of *Giardia intestinalis* in the contents taken from the duodenum is noted in 13 separate cases, the organisms being particularly abundant after ingestion of salt.

In 4 of these cases acidity was normal, in 5 subnormal, and in 2 supernormal. In 2 cases (one cholecystitis, the other gall-stone) the organisms—present in the duodenum contents—were not found in the gall-bladder.

Post-mortem, in a cachetic patient who had suffered from chronic enteritis and died of intercurrent pneumonia, Giardia was observed in the small intestine, along with changes in the mucosa of the ileum.

The conclusion of the matter is that although Giardia is not harmless, its particular connexion with disease of the bile passages is still unsure.

A. A.

BECK (M.). Choleraähnliche Erkrankung, veranlasst durch *Lamblia intestinalis.* [**A Disease simulating Cholera caused by** *L. intestinalis.*]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Nov. 6. Vol. 29. No. 11. pp. 668–670.

This case occurred in East Africa, in 1915. The patient was stricken, early in the morning, with vomiting and diarrhoea. The stools, which were passed every 10 to 15 minutes, at first without pain, but afterwards with straining and smart, were perfectly clear and watery or slimy; nothing could be found in them but epithelial and scattered pus cells and, later, very numerous active forms of *Giardia intestinalis.* Cramps in the calves supervened, the belly became sunken and tender and at midday the patient was in a state of collapse. After treatment for collapse, and then some castor oil, the motions next day were fewer, and the stools bile-coloured and less slimy; and on the third day the patient was well, though cysts of Giardia were found in the stools for some time afterwards, of course.

A. A.

PANAYOTATOU (Angélique). Sur deux cas de "Lambliose" chronique "*Giardia intestinalis*" Lambl. Guérison par le stovarsol. [**Two Cases of Chronic Giardiasis cured by Stovarsol.**]—*Rev. Méd. et Hyg. Trop.* 1925. Nov.-Dec. Vol. 17. No. 6. pp. 225–229. [4 refs.]

The author states that in Egypt—and particularly in Alexandria—active forms of *Giardia intestinalis* are the only parasites to be found in the stools in certain cases of intractable gastro-enteritis, characterized by alternating remissions and aggravations of dyspepsia, concurrent with pain in the caecum or extending all along the colon and the passage, with tenesmus, of frequent, foetid, soft or liquid, greenish or brownish stools. He gives abstracts of two such cases cured by stovarsol as recommended by MARCHOUX, the amount given in these cases being 0·25 gm. daily, divided in two doses.

A. A.

IVANOFF (E.). Un nouveau mode de conservation et d'envoi des trypanosomes et des spirochètes dans des larves de *Galleria melonella.* **[New Method of Keeping and Distributing Trypanosomes and Spirochaetes.]**—*C. R. Acad. Sci.* 1925. Aug. 3. Vol. 181. No. 5. pp. 230–232.

The author has much to say of the convenience and economy of distributing spirochaetes and trypanosomes for laboratory requirements in caterpillars of the bee-moth (*Galleria melonella*). He has infected these caterpillars with *T. equiperdum, brucei, pecaudi,* and *lewisi,* and with *S. duttoni,* and finds that they hold the infection of the first for 10 days and of the others for 5 or 6 days.

A. A.

i. DESCHIENS (R.). Kystes de *Giardia* sp. observés chez le lion (*Felis leo*). **[Cysts of *Giardia* sp. observed in the Lion.]**—*C. R. Soc. Biol.* 1925. Nov. 6. Vol. 93. No. 31. pp. 1065–1066.

ii. THOMSON (J. G.) & ROBERTSON (Andrew). **The Cysts of *Tricercomonas intestinalis* Wenyon and O'Connor 1917 found in Human Faeces.**—*Jl. Trop. Med. & Hyg.* 1925. June 15. Vol. 28 No. 12 pp. 223–225. With 1 plate. [19 refs.]

iii. —— & ——. **A Note on the Flagellates of Anophelines and Culicines previously mentioned in the Literature with a Description of a Crithidial Form in a New Host *Anopheles umbrosus* from the Federated Malay States.**—*Ibid.* Dec. 1. No. 23. pp. 419–424. With 19 text figs. [39 refs.]

i. The author in a systematic survey of faeces of large carnivora captive in Paris has found cysts of Giardia in the case of two lions. Cysts in sufficient quantity to cause infection were given to two kittens by way of mouth, but did not cause infection.

ii. The cysts are described and different phases liberally figured. Observations of previous authors are considered and the conclusions of DOBELL and O'CONNOR with regard to the status of the genus *Tricercomonas* are criticized.

iii. This paper contains a full and particular summary of this subject, together with a long list of references to the original papers.

A. A.

PONS (R.). Coccidiose intestinale humaine à *Isospora belli* (Wenyon, 1922). Considérations générales. (Etude de deux nouveaux cas observés à Saigon). **[Human Intestinal Coccidiosis (*Isospora belli*). Two New Cases seen at Saigon.]**—*Bull. Soc. Path. Exot.* 1925. July 8. Vol. 18. No. 7. pp. 570–584. With 13 figs. on 2 plates.

The greater part of this paper is historical and zoological, to which are added some details (with figures) of the structure and final development of the oocyst of *Isospora belli.* Upon this useful foundation is based a clinical account of two cases of this infection observed at Saigon. In the prologue the difficulty of infecting laboratory animals with human coccidia is confirmed, and the author infers therefrom that some sort of concurrent irritation of the intestine is necessary for success; the early history of these two cases gives countenance to this conclusion.

The first case was in a native gunner. The early symptoms—following a repast at a Chinese cookshop in the course of which some questionable eggs were consumed—so closely and completely resembled cholera that, although no vibrios could be found, the case was diagnosed as such On the 7th day, when the patient seemed to have recovered, pains in the right knee set in and sensory and motor paresis of the anterior muscles of the leg, this lasting for about 10 days, during which stools were normal. On the 18th day colic and diarrhoea recurred, the stools now consisting of mucus streaked with blood, and although no organisms but Giardia could be discovered the patient was treated for amoebic dysentery, finally recovering on treparsol. On the 45th day colic and diarrhoea recurred again, the stools were simply stercoraceous and in them oocysts of Isospora were discovered, on the 47th day Oocysts continued to be passed for 30 days, the patient complaining of vague pains in the right flank and being treated with treparsol No enlargement of spleen or liver occurred in this case Among the faecal contents there were Charcot-Leyden crystals

The second case was in a European woman. The earliest symptoms—diarrhoea and sharp colic—were traced to a meal at an hotel, for some months after which the patient suffered from continued alternations of diarrhoea and constipation, oocysts not being discovered until 9½ months had elapsed. They continued to be passed for 16 days and disappeared after treatment with santonin and calomel, but the intestinal troubles recurred after the oocysts had disappeared In this case the liver was considerably enlarged and tender, and Charcot-Leyden crystals were not found in the stools

A A.

PINTO (Cesar) & PACHECO (Genesio). Sobre a presença da " Isospora belli " Wenyon, 1923 no Brasil. [" *Isospora belli* " **in Brazil.**] —*Sciencia Medica.* 1925. July 31. Vol. 3. No. 7. pp. 447–453. With 12 figs. [6 refs.]; also in *C. R. Soc. Biol.* 1925. Nov. 20. Vol. 93. No. 33. p. 1258. [1 ref.]

A precise account, documented and abundantly illustrated, of a case of chronic dysentery with faeces abundantly infested by oocysts of *Isospora belli* Wenyon, and also containing evidence of *Giardia intestinalis, Chilomastix mesnili, Trichomonas hominis,* and *Trichuris trichura,* besides active and precystic forms of *Entamoeba histolytica.* The patient was a Brazil-born child of European parents.

A. A.

ADIE (Helen). Nouvelles recherches sur la sporogonie de *Haemoproteus columbae.* [**Fresh Researches on the Sporogony of** *H. columbae.*]—*Arch. Inst. Pasteur d'Algérie.* 1925. Mar. Vol. 3. No. 1. pp. 9–15. With 4 figs. on 2 plates & 5 text figs. [7 refs.]

The main facts of the sporogony of *Haemoproteus columbae* in the Hippoboscid fly *Lynchia maura* were discovered (in India) and made known by Mrs. Adie in 1914, and, owing to the fact that they did not then receive the attention to which they were entitled, have been republished, with all necessary amplification of detail, more than once since then. Mrs. Adie has recently repeated her work in Dr. Edmond SERGENT's laboratory in Algiers (see this *Bulletin*, Vol. 22, p. 279), and has now set it forth with full illustrative detail (2 plates and 5 text-figures).

A. A.

TALIAFERRO (Lucy Graves). **Infection and Resistance in Bird Malaria, with Special Reference to Periodicity and Rate of Reproduction of the Parasite.**—*Amer. Jl. Hyg.* 1925. Nov. Vol. 5. No. 6. pp. 742–789. With 9 charts in text. [15 refs.]

This is an " intensive " study of the course of experimental infections of 6 canary birds with the parasite of bird-malaria (which the author is inclined to call *Plasmodium praecox*), with corroborative contributions from 11 other similarly infected birds. Two infective strains were employed; one (new strain) from a recently captured New York sparrow, the other (old strain) a laboratory strain which had been run since 1913, through a series of canaries, from a sparrow captured in New York. The experimental infections were made by injecting about 0·5 cc. of a normal saline dilution of infected blood into the muscle of the breast. In the collection of the data required the number of parasites was the calculated proportion of parasites per 10,000 red blood cells; the mean size of the parasites was determined from camera (×3,000) drawings of 100 (sometimes only 50 were to be obtained) parasites; and the coefficient of variation was calculated from formulae given. The duration of the non-sexual cycle and the rate of non-sexual reproduction of the parasite were determined by plotting the mean size of parasites at four-hour intervals and noting the lapse of time between points when only large schizonts " exist in the blood."

From the data laboriously obtained the following are the main conclusions reached regarding the behaviour and fate of " Plasmodium praecox " in the bird host. The length of the non-sexual cycle is approximately 24 hours (new strain) or 30 hours (old strain). The percentage of gametocytes is around 3 in the acute period of the infection, but there is a marked increase (2–50) during relapse and sometimes during the chronic period (or period of developed infection). The rate of non-sexual reproduction of parasites (by the author's method of calculation) did not change in the acute stage, the chronic stage, or the relapse brought about by administration of adrenalin. The time and the rhythm of the non-sexual cycle were the same during relapse as during acute and chronic stages. A large percentage of merozoites perish during the acute period (=natural resistance of host). " The acquired resistance, operative at the crisis and thereafter, destroys the parasites after they are formed, but does not retard or inhibit their rate of reproduction."

A. A.

BOYD (George H.). **The Influence of Certain Experimental Factors upon the Course of Infections with** *Plasmodium praecox*.—*Amer. Jl. Hyg.* 1925. Nov. Vol. 5. No. 6. pp. 818–838. With 1 text fig. [14 refs.]

The purpose of the experiments described here was to follow in canary birds the course of laboratory infections of bird malaria (the parasite being called *Plasmodium praecox*) and to observe how they were affected by the size of the " dose " of the parasite, or were influenced by the particular medium (whole blood, washed cells, serum) used in inoculation, and also whether the parasites were equally virulent at all stages of an infection, or were affected by rapid passage.

The size of the dose (*i.e.*, the number of parasites contained in an inoculation) was calculated, first, by determining, in stained smears of the blood of the bird to be used for inoculations, the ratio of parasites to red blood cells, and then by making an erythrocyte count of a normal saline dilution of the blood of that bird ; and from these data making the necessary calculation for any given dose of the dilution. Inoculations of doses calculated to contain small numbers of parasites (1,000 or less) produced infections in only a small number of cases. Inoculations with calculated doses of 10,000 parasites failed in one of six cases. Inoculations calculated to contain 100,000 to 20,000,000 parasites never failed of infection.

A definite correlation was observed between the number of parasites inoculated and the length of the incubation period and the height of the infection. No significant correlation was observed between the number of parasites inoculated and the rapidity of the rise of the infection.

Inoculations of parasites in whole blood, or in cell suspensions washed free of serum, gave very similar results ; but in inoculations with serum (only) from infected blood only 4 of 10 cases ever showed any parasites, and then only after a prolonged incubation period.

" The virulence of the parasites present in an infection appears to decrease to a slight extent as the infection progresses. The virulence of the parasites is increased somewhat by rapid passage from one bird to another."

A. A.

BOYD (George H.). **Therapeutic Action of Quinine Hydrochloride and Certain Quinine Derivatives in Experimental Infections with** *Plasmodium praecox*.—*Amer. Jl. Hyg.* 1926. Jan. Vol. 6. No. 1. pp. 173–195. With 9 charts in text. [6 refs.]

The questions proposed for experiment were to elicit the value in the treatment of canaries infected with *Plasmodium praecox* of quinine hydrochloride, and certain complex synthetic derivatives of quinine, and in the case of quinine hydrochloride to compare its action in infected canaries with its action in human malaria. The methods of experiment are described and the results of experiment discussed and tabulated.

Quinine chloride may be given in a comparatively large single dose without causing death, but in frequently-repeated doses it produces very severe effects, in birds. It is capable of killing the parasites *in vitro* in 20 minutes in a concentration of half a minimum lethal dose (for a bird) per 1 cc. of solution. Given to a bird in a single half-minimum lethal dose (*a*) 1 hour before an inoculation with 5,000,000 parasites it is incapable of preventing infection ; and (*b*) in the early stages of infection is followed by a—usually temporary—decrease in the number of parasites ; given in frequently repeated quarter-minimum lethal doses, in the early stages of infection, it is capable of holding the attack in check, although complete eradication of the parasites has not been effected. As none of the other drugs (14) has proved so effective as quinine hydrochloride, it may be permitted to refer the reader to the original paper on this point. The response of the parasite of bird malaria and that of [benign] tertian malaria of man to quinine hydrochloride " compares very closely."

A. A.

ZIEMANN (Hans). Einige Bemerkungen zur Balantidium-coli-Infektion bei Menschen und Schimpansen. [*Balantidium coli* **Infections in Man and Chimpanzee.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 434–448. [33 refs.] With 2 figs. on 1 plate.

This is a clinical and pathological study of 8 cases of *Balantidium coli* infection (2 in man, 6 in chimpanzees) in which the symptoms were severe. It contains a great deal of detail (and a bibliography), but nothing strikingly novel.

It is noted that infection may exist for a long time without any display of symptoms, and that this suggests that pathological phenomena depend on some contributory factor attributable to the host or to the reaction of the mucous membrane of the gut. In 2 cases (chimpanzees) parasites were found having penetrated into sound tissue, suggesting that necrosis begins in the depth and not at the surface of the gut. In the two human cases no protective substances could be found in the serum. The author's attempts to infect himself *per os* and a cat *per rectum* with the faeces of an infected chimpanzee were not successful.

For the treatment of balantidiasis in man emetine concurrently with rectal injections of solution (1 in 1,000) of quinine, followed by a course of Carlsbad salts is quickly effective. In chimpanzees Yatren either by mouth in small and slightly increasing doses or by rectal injections of a 3 per cent. solution is efficacious.

A. A.

ŌI. **Experimental Investigation of Balantidiasis.**—*Taiwan Igakkai Zasshi.* (*Jl. Med. Assoc. Formosa*). 1925. Oct. No. 247. English summary pp. 1–2. With 2 plates. [In Japanese. [34 refs.]]

The species of Balantidium found in pigs in Taiwan and the species found in man are identical. 36 to 92 per cent. of the Taiwan pigs examined by the author were infected, the number of infections increasing in the summer and decreasing in the winter. Only about half the pigs found infected—the site of infection being always the caecum and ascending colon—showed any pathological changes; these changes were diffuse infiltration and haemorrhages and, microscopically, cell infiltration and invasion of parasites in the submucosa, and occasionally small ulcers in the caecum and affected colon. Even the pigs that were found infected had not in all cases shown symptoms of disease. A young pig that received injections of the parasite [whether cysts or active forms is not stated] both by mouth and by rectum became infected, since, though showing no symptoms of disease, the above-described pathological changes were observed when it was slaughtered 172 days afterwards; but 6 other young pigs that received these injections either by mouth alone or by rectum alone did not become infected.

A. A.

THOMSON (J. G.) & ROBERTSON (Andrew). **Notes on the Cultivation of Certain Amoebae and Flagellates of Man, using the Technique of Boeck and Drbohlav.**—*Jl. Trop. Med. & Hyg.* 1925. Oct. 1. Vol. 28. No. 19. pp. 345–349. With 2 text figs. [6 refs.]

The authors found the cultivating of *Entamoeba histolytica* by the method of BOECK and DRBOHLAV to be a comparatively simple matter, and they continued one cultivation through a series of 96 transplantions, though amoebae were scanty in the earlier cultures. They also cultivated *E. coli*, *Dientamoeba fragilis*, *Endolimax nana*, and *Iodamoeba butschlii*, and (with the addition of a small quantity of sterilized human faeces to the B. & D. medium) *Trichomonas hominis*, *Chilomastix mesnili*, and *Tricercomonas intestinalis*. They describe the movements and behaviour of these organisms, verifying the fact that *E. histolytica* in cultivation ingests bacteria and commenting on a conjectured detractive effect of Blastocystis on the cultivation of this amoeba.

A. A.

RAMIREZ CORRIA (C. M.). Méthode de coloration élective des amibes dans les coupes. [**Elective Staining of Amoebae in Sections.**]—*C. R. Soc. Biol.* 1925. Oct. 30. Vol. 93 No. 30. pp. 1015–1017. With 1 text fig.

The author praises, as giving exquisite definition of every detail, the following method of staining amoebae in either celloidin or frozen sections of tissue that has been hardened either in alcohol or formol.

Wash the section in alcohol if it contain much fatty matter. Immerse for 1 to 15 minutes in a cold, watery, 3 to 8 per cent solution of tannin. Wash in ammoniated water (1 drop in 10 cc of water) until the sections are flexible Immerse in a solution of 10 drops of ammoniacal oxide of silver to 10 cc of water, until the edges of the section begin to show yellow. Wash in water. Immerse in a ¼ or ⅛ per cent. cold or tepid solution of gold chloride until the appearance of a violet colour Fix for 1 minute in a 5 per cent solution of sodium hyposulphite Wash in water Counterstain with picro-indigo-carmine After dehydration, clear in a mixture of toluol 80 and phenol and creosote each 10 parts. ["Water" throughout = distilled]

A. A.

ADLER (S.) & THEODOR (O.). **A Sporozoon of** *Phlebotomus papatasii*.—*Ann. Trop. Med. & Parasit.* 1925. Sept. 30. Vol. 19. No. 3. pp. 309–313. With 12 text figs. [6 refs.]

The material here described, figured, and placed in the genus *Hepatozoon*, consisted of some ripe oocysts taken from the thorax and abdomen of a female *Phlebotomus papatasii*. These oocysts were filled with motile sporocysts each of which contained 4 to 16 sporozoites. Each individual sporozoite on escaping from the ruptured sporocyst was, although motile, enclosed in a membrane of its own from which it subsequently emerged through a longitudinal split. Sporocysts as well as free sporozoites were injected into the peritoneal cavity of two kinds of skink lizards (Gongylus and Mabuia), a gecko lizard not being at hand; but though the blood of the lizards was examined during the subsequent 5 weeks of life allowed them, and their livers and lungs and bone marrow were searched after death, not any stage of haemogregarine was found. Material containing sporocysts and sporozoites was also inoculated into the skin of two healthy men whose blood disclosed no consequences in the course of the following 5 weeks.

A. A.

KUDO (R.). **Studies on Microsporidia parasitic in Mosquitoes. IV. Observations upon the Microsporidia found in the Mosquitoes of Georgia, U.S.A.**—*Cent. f Bakt.* I. Abt Orig. 1925. Nov 25. Vol 96. No. 7-8. pp. 428–440. With 86 figs. on 2 plates [7 refs]

The author describes species of Thelohania found infecting larvae (and exceptionally adults) of Anopheles and Culex, and a Nosema infecting Anopheles larvae in Georgia, U.S.A.

A A.

i. PATTON (W. S.). **Diptera of Medical and Veterinary Importance. I. Types of Older Authors in Continental Museums.**—*Philippine Jl. Sci.* 1925. June. Vol. 27. No. 2. pp. 177-200.

ii. ——. **II. The More Important Blowflies, Calliphorinae.**—*Ibid.* July. Vol. 27. No. 3. pp. 397–411. [2 refs.]

i. In its way—which is an arduous way, dry and dusty and wholly unattractive to any but the systematist—this is a very interesting paper. The author has been examining the actual specific types of Diptera preserved in the principal museums of continental Europe, and he gives here some account of what he has seen and thought of them. His discovery that a dipterist of such eminence as WIEDEMANN did in the course of his work describe one kind of Musca under five different specific names, and his statement that the collection of the famous FABRICIUS at Kiel does not—so far as it remains—contain a single specimen of *Musca domestica* of Linneus, labelled as such, should help the most austere entomologist to realize how human and how pardonable rather than how disgraceful and punishable it is to err and waver in little matters of opinion. His statement that the blood-sucking Muscids known as "Bdellolarynx" may be included in the generic concept of Haematobia is of pertinent interest here

ii. A continuation of the above, and dealing with blow-flies and screw-worm flies.

A. A.

FRANCHINI (Giuseppe) Brevi note di entomologia sulla Somalia e sulla Eritrea. [**Entomology of Italian Somaliland and Eritrea.**]—*Pathologica.* 1925. Sept. 15. Vol. 17. No. 404. pp 494–495.

It is the aim of the author to compile an "entomological monograph" for various colonies, and in the present paper he enumerates some of the specimens already identified in Somalia: *Anopheles claviger, Aëdes argenteus, Theobaldia longiareolata* and *T. annulata, Glossina pallidipes,* various species of Cheironomidae and Simuliidae, *Phlebotomus papatasii* and *P. minutus, Hyalomma aegyptium, Amblyomma* and *Haemaphysalis, Argas persicus, Ornithodorus moubata* and *O. savigni.*

In Eritrea: Many Culicidae, among them *Aëdes argenteus, Theobaldia longiareolata,* Cheironomidae (*palustris* and *venustus*) and *Culex pipiens.*

H. Harold Scott.

NÚÑEZ TOVAR (Manuel). Indice dipterologico de Venezuela. **[Dipterological Index of Venezuela.]**—*Gac. Méd. de Caracas.* 1925. Aug. 31. Vol. 32. No. 16. pp. 250–253.

A list of flies [apparently restricted to species that are presumed to suck blood] that occur in Venezuela. It contains the names of 116 species, of which 9 are Anopheles and 63 Culicidae of other species, 5 are Phlebotomus, 36 Tabanidae, and 3 Muscidae.

A. A.

PATTON (W S) & MACGILL (E.). **Comparative Studies of the Antennae of some of the Higher Diptera.**—*Indian Jl Med. Res.* 1925. Oct. Vol. 13. No 2 pp 275–285. With 67 figs. on 7 plates

In this paper the distribution of the sensory pits and pockets of well-known occurrence in the third antennal segment of Muscoid flies are described and roughly figured for a considerable number of species of Muscidae The interesting histology of these organs is not dealt with, nor are any references given to previous work on this subject.

A. A.

KIRKPATRICK (T. W.). **The Mosquitoes of Egypt.**—pp. xi+224. With 33 plates & 2 folding maps. Egyptian Govt. Antimalarial Commission. 1925. Cairo.

This is a very fine and complete study of the 22 species of mosquitoes —6 Anopheles, 1 Uranotoenia, 1 Theobaldia, 3 Aedes, and 11 Culex— known to inhabit Egypt. Each species is described in the male form (and genitalia), in the female form, and in the full-grown larva and the pupa stages, and in the plates the male genitalia and the principal specific characters of the larvae and pupae are figured. There is a good introduction to the study of mosquitoes, in which the structural details of the adults and of the larva and pupa are described with illustrative figures. There is also a good section on the Natural History—what is now called Oecology and Biology—of mosquitoes. Then, after a chapter on the physiography, hydrography, and climate of Egypt, the distribution, seasonal prevalence, and other details of the oecology and biology of the 22 Egyptian species are considered.

The material on which this very comprehensive study is based was obtained in a survey, extending from February 1st to November 30th, chiefly of the Nile Valley and Delta, but also including some oases and waterholes and wells of the desert.

A. A.

EDWARDS (F. W) & JAMES (S. P.). **British Mosquitoes and their Control.**—*British Museum (Nat. Hist.). Economic Series.* No. 4a. 27 pp. With 4 text figs. 1925. London: Printed by Order of the Trustees of the British Museum. [Price Sixpence.]

This useful publication consists of two sections, one dealing systematically with the insects themselves, the other with their control. The systematic part contains a " key," generic definitions, short and easy specific diagnoses, and statements of the habits and distribution of individual species; from all these particulars most of the British species—certainly all those of common occurrence—can be identified. If, as may be assumed, this part is intended to help the amateur rather than the expert, it must be regarded as a defect that it does not provide a definition of mosquitoes as a family, since it is a matter of everyday experience that people whom one expects to have more sense mistake some very common insects—e g., some Chironomids and small Tipulids, and, above all things, the common *Rhyphus fenestralis*— for mosquitoes The section dealing with the control of mosquitoes is particularly good—alike in conception, in firm enunciation of principles, in exact and discriminative application of principles to practice, and in clear and convincing exposition

A A

i. BRUMPT (E) Capture des larves de Culicidés par les plantes du genre *Utricularia* [**Capture of Culicid Larvae by Utricularia.**]—*Ann. Parasit Humaine et Comparee* 1925 Oct Vol 3 No 4. pp 403–411 With 3 text figs [14 refs]

ii. LANGERON (M) Biologie et écologie des utriculaires dans leurs rapports avec la prophylaxie du paludisme [**Utricularia and the Prevention of Malaria.**]—*Ibid* pp 412–425 With 4 text figs. [14 refs]

These two papers are complementary in their purpose, which is to uphold the practical efficiency of Utricularia against the malarial mosquito

i The author relates his personal observations of the results of loosing mosquito larvae in vessels of water in which some *Utricularia vulgaris* was floating The larvae were very soon found trapped within the bladders of the plant, of about 100 young Anopheles larvae loosed in one experiment nearly 50 were thus imprisoned in less than 3 hours, most of the bladders in one particularly attractive branch containing from 1 to 5 larvae each He also gives an interesting summary of observations of the trapping of small aquatic animals by Utricularia, published by previous authors from 1875 onwards, in some of them Culicid larvae are mentioned among the prey

ii. This paper contains an interesting sketch of the Utricularias—small herbs, found in all parts of the globe, growing in humid soil, or aquatic—and a description of the bladders in which they capture their small prey The rootless aquatic species, which float on the surface of the water, must be one of Nature's curbs on Anopheles larvae, and the author considers that in the strife against Anopheles "no means, howsoever apparently feeble, should be ignored' A list of these expectative aquatic species of Utricularia is given with the geographical distribution of each

A A

ORISHITA (Kaoru). **Experimental Observations on the Habits of *Culex quinquefasciatus* Say, with Special Reference to the Influence of Hydrogen-Ion Concentration upon its Development.**—*Taiwan Igakkai Zasshi* (*Jl Med Assoc of Formosa*) 1925 Sept No 246 English summary pp 1–3 [In Japanese]

The novel points in these observations of *Culex fatigans* appear to be as follows: Eggs when dried retain their vitality unimpaired for 3 days, but are quite dead after 5 days Eggs withstand temperatures as low as 2° to —2° C for one day, at the other extreme they died [in the author's experiments] when the temperature of the water reached 40° C Eggs hatch equally well in a pH range of 2 to 9 8, but the young larvae soon die in a pH 2 concentration Larvae, if food be present, develop equally well in a pH range of 5·3 to 9 4, and pupae hatch equally well in a range of 3 2 and 9·8 The pupal stage is much prolonged even at a temperature of 9° C

A A.

BRUMPT (E) Ponte et résistance des oeufs de l'*Anopheles maculipennis* **[The Egg Laying and Egg Resistance of** *A maculipennis* **]** —*Ann Parasit Humaine et Comparée* 1925 Oct Vol. 3 No 4 pp 396–402 With 3 text figs [8 refs]

The author has observed *Anopheles maculipennis* in the very act of parturition (in the evening at 6 20 summer time) The insect first posed herself upon the water, with *only* the first pair of legs resting on the vessel containing the water, the other legs resting on the water, the abdomen extended parallel with the water, and the tip of the abdomen slightly *upcurved* In this position the eggs (to the number of 90 in this particular case) fell upon the water. Fresh-dropped eggs on absorbent paper could be kept dry for 48 hours at a temperature of 12°–15° C, without detriment to life, and for 72 hours in a moist atmosphere, at the same temperature Eggs taken from the water after embryonic development had progressed and then kept on absorbent paper in a moist atmosphere, at the same temperature, might in some instances hatch after as much as 5 days when returned to water

Incidentally, the author confirms the observation that in these latitudes *A maculipennis* does not hibernate in the strict sense of the term, since females, when the winter temperature is favourable, may be found full of blood Incidentally also he confirms the observation that although *A maculipennis* is attracted to domestic animals and their environment rather than to man, its voracity for man can be demonstrated readily enough even when it is brought from a stable or cattleshed

A A

i STRICKLAND (C) **The Mosquito Factor in the Malaria of Assam Tea Gardens.**—*Indian Med Gaz* 1925 Nov Vol 60 No. 11 pp 514–524 With 15 text figs [9 refs]

ii COLAS BELCOUR (J) Sur les anophélines en Basse Normandie **[The Anophelines of Basse-Normandie.]**—*Bull Soc Path Exot* 1925 Oct 14 Vol 18 No 8 pp 659–660 [7 refs]

iii SWELLENGREBEL (N H) *Cellia errabunda* n sp een nieuwe anopheline voor Nederlandsch Indië **[A New Anopheline from D.E.I.]**—*Nederl Tijdschr v Geneesk* 1925 Apr 25 69th Year 1st Half No 17 pp 1913–1915 With 5 text figs

iv PETROCHI (Juana) Descripción de un nuevo *Anopheles* **[A New Anopheles.]**—*Rev Inst Bacteriol* Buenos Aires 1925 Mar. Vol 4 No 1 pp 69–75 With 5 text figs [1 ref]

v KŌ RAN **On the Predilection for Colours by Mosquitoes.**—*Taiwan Igakkai Zasshi* (*Jl Med Assoc Formosa*) 1925 July No. 244 English summary pp 2–3 [In Japanese]

vi ANNALS OF TROPICAL MEDICINE AND PARASITOLOGY 1925 Dec 16 Vol 19 No 4 p 466 —**The Predaceous Habit of the Larvae** *Mucidus scatophagoides* [Miscellanea]

i The essentials of this paper have already been noticed (Vol 22, p 899) The present re-publication includes some questions of policy and general interest and also provides some very useful illustrations of breeding-grounds of Anopheles

ii. The three common species, *A maculipennis*, *A bifurcatus*, and *A plumbeus*

iii Description of a new species of Anopheles from Borneo closely resembling the tropical American *A argyrotarsis* Four specimens were caught

iv The species here described (with some figured detail) as *Anopheles bachmanni*, from Argentina, is most nearly related to *A argyrotarsis* and *tarsimaculatus*

v In 14,285 observations of Culex—mostly *C quinquefasciatus*—blue, purple, red, and black were preferred, as a resting surface, to yellow, white, deep-red, and green

vi The larvae of this species were observed by Dr F A INNES to devour larvae of other species of mosquitoes supplied to them

A A

HARGREAVES (H) **Ann. Rep. of the Govt. Entomologist.**—*Uganda Protectorate Ann Rep Dept of Agric for Year ended 31st Dec, 1924* pp 21–28

A great pest in E Busoga is the *embwa* fly, *Simulium damnosum.* It breeds in rocky rapids of the Nile, attacks man freely, travelling far for this end, and is stated to be largely responsible for the sparsity of the local population Damming the Nile is hardly an undertaking for the entomologist Fortunately, the fly usually does not attack at a level more than three feet above the ground, so that protection of the feet and legs gives security In the case of bare legs, smearing with almost any oil or grease, either alone or in emulsification with creosote or tar, gives adequate protection, kerosene-naphthaline emulsion however, was ineffective, an efficient material, which also has the advantages of cheapness and of being locally produced, is "cottonseed tar"

A A

JOHNSTON (T Harvey) **Remarks on the Commoner "Bush-flies" of Australia.**—*Health.* 1925 July Vol 3 No 4 pp 110–113

The commonest "bushflies" of Australia are here stated to be *Musca vetustissima* and *M fergusoni* Both, but particularly the former, are present in towns as well as in the bush, in Australia They are most persistent pests, and are attracted to wounds and sores, "they are almost certainly the main vectors of trachoma in the Commonwealth", they are also fond of human faeces, and for that reason would be as dangerous as the ordinary house fly if—as they are not—they were greatly addicted to haunting houses So far as is known from limited study, *M vetustissima* lays 20 to 40 eggs in fresh cow (sometimes horse) dung, and the egg and larva stage together occupy 4 to 6 days, in spring, and the pupa stage 6 or 7 days *M fergusoni* is larviparous, producing a single maggot at a time, in the 2nd instar, which is deposited preferably in fresh cowdung, the larva stage is "much abbreviated," and the pupa stage takes from a week to a month

A A.

YORKE (Warrington). **Co-ordination of Effort in Tsetse-Fly Investigations.**—*Ann. Trop. Med. & Hyg.* 1925. Sept. 30. Vol. 19. No. 3. pp. 373–379.

This paper advocates the co-ordination of all studies in the field of trypanosomiasis under central direction, to ensure, at the least, the unanimity and the purposeful continuity which at present cannot be said to exist. [In agreeing with the author one may be permitted to express the opinion that " co-ordination " without central control is a misleading metaphor.]

A. A.

SOCIETY FOR THE PRESERVATION OF THE FAUNA OF THE EMPIRE. London. 1925. Oct. **The Tsetse-Fly Problem and its Solution. Occasional Papers No. 1.**—10 pp. With 1 map.

There is nothing new in this pamphlet in which the argument for and against the control of tsetse-fly by indiscriminate destruction of game is examined. The insufficiency of the evidence in support of the positive statements that the absence of game, or the destruction of game—whether by man or by natural causes—has in some particular instance been followed by disappearance of tsetse-fly is emphasized. The difficulties and embarrassments and expense of endeavouring to exterminate game are described, as well as the possible danger of scattering the fly into new territory, and the admitted danger of diverting the fly to man, by destroying its established sources of food. The natural and economic value of big game is exemplified, as well as its permanent scientific interest.

More promising methods of dealing with tsetse-fly are outlined. The population may be organized to cut back the bush that shelters the fly, from their settlements, or to deprive the fly of shelter by periodical bush fires, properly timed and carefully planned, or to check its spread by broad belts of arable land, suiting the method to the particular circumstances of the locality.

A. A.

SYMES (C. B.). **Tsetse Fly Control in Kenya.**—*Kenya Med. Jl.* 1925. Oct. Vol. 2. No. 7. pp. 191–205.

The chief areas of tsetse-fly infestation near the Victoria Lake in Kenya were determined by Dr. J. O BEVEN in 1921. Intensive investigations are now in progress in three areas in the district of Karachonya in S. Kavirondo. Karachonya is on the Lake shore, where three fairly large rivers discharge into the lake ; its population, which is still relatively dense, notwithstanding the ravages of sleeping-sickness, is pastoral (cattle and goats), and agricultural (maize), but its standards are low ; the people seem to possess a considerable degree of immunity to trypanosomiasis. Besides the dangerous *Glossina palpalis*, *G. brevipalpis* exists there. Measures of control have been started in Miriu, and, if they prove successful, will be adopted elsewhere. The most promising measure appears to be clearing and stumping of bush and settling the reclaimed land for continuous pasture and agriculture ; also clearing the bush in the neighbourhood of watering-places and fords. The nature of the jungle does not lend itself to grass-fires. There is some difficulty about labour for clearing, owing to the indifference and even the opposition of the people. For the protection of the labourers, work is stopped during the hours—7.30 or 8 a.m. to 4.30 p.m.—when the fly is active ; smoke-screens also are useful. Attention is directed to the cultivation of bananas and papaws, also to the policy of offering special inducements to permanent settlers in the cleared bush, to the growing of economically valuable timber, to the necessity of drainage, and to the direction of traffic into routes kept free of fly.

A. A.

GOLD COAST. **Third Report on Tsetse Fly Conditions in the Gold Coast. (Secretary of State's Despatch No. 630/1923.) 3rd August to 28th August.** [YOUNG (W. A.), Director, Med. Res. Inst., Accra.]—6 pp. F'cap. [Unpublished Report enclosed in Despatch No. 692 dated 28th Sept., 1925, from the Acting Governor of the Gold Coast to the Secretary of State. Received from the Colonial Office, Jan. 8, 1926.]

This is the report of a tour, completed between the 3rd and 28th August [1925], in the sparsely populated country between Kintampo and Bole watered by the Volta river. At that time the weather was dull and cool, and the river was filling, owing to frequent and heavy storms of rain ; the trees were in leaf and the grass was flourishing (2 to 6 feet high), big game was plentiful, and tsetse fly were abundant and particularly active at certain places along the river, a definite " belt " of *morsitans* being obvious in the vicinity of Wasipe, and another of *longipalpis* between Kintampo and Kumasi. The species encountered besides those two were *G. palpalis, tachinoides,* and *fusca.* The last-named, as well as *longipalpis,* were detected biting long after nightfall, and the author makes the general statement that tsetse-fly will bite at any hour if the vegetation in which they are resting be disturbed. It is noteworthy that breeding-grounds of *tachinoides* which had been found well-stocked with pupae in the month of December were at this time quite barren. Some suspicious cases of sickness were observed, but trypanosomes were found in only one case. A fair percentage—16 and 12 per cent. respectively—of the flies dissected was found infected with trypanosomes of the *congolense* and *vivax* groups.

The results of this August tour show that in the north-western part of the Gold Coast the intensity of " fly " varies enormously through the year, and the author offers the vagaries of the Volta river as a possible explanation of the fact that tsetse flies have not run riot in the Province. In February-March the river is at its lowest, shade is deficient, and grass is dried up or actually burnt. After March the river rises and falls fitfully till June, when local tornadoes may raise it several feet within a few hours, to fall again. In the course of August it will rise, by sudden mounts, as much as 32 feet, and flood the land for a mile on either side. By December it has returned to its early August state ; the floods have dried, leaving in the vicinity of the river a sandy soil which, in places where shade is present, is suitable for pupae. The months just before and just after December (October-January) appear, therefore, to afford those favourable conditions for pupation which, at other times of the year, are made precarious by the caprices of the river.

A. A.

GAUDET (Lucien S.). **Removal of Sixty-two Screw Worms from the Soft Palate.**—*Southern Med. Jl.* 1925. Nov. Vol. 18. No. 11. pp. 824–825.

The author comments on the abnormal frequency of infestation with screwworms in the rural districts within his experience. The patient in this case, a youth of 18, remembered having gone to sleep in the porch after dinner a few days before his sufferings began. When seen he complained of intense pain and of difficulty in swallowing; he had fever (100·4° F.) and a foetid ozoena; the soft palate was found to be swollen and perforated, the perforation filled with writhing maggots, of which 20 were removed at once. A pack carrying cocain solution was inserted for a few minutes, and then a pack well impregnated with chloroform, while maggots were removed in their attempts to escape. Maggots were removed during the next two days following, and the patient was discharged 6 days afterwards. The total number of maggots removed was 62.

A. A.

FRANCHINI (Giuseppe). Myiasi nasale e myiasi gastro-intestinale. [**Nasal and Intestinal Myiasis.**]—*Riforma Med.* 1925. Aug. 24. Vol. 41. No. 34. pp. 795–796.

A discursive account from Bologna of a girl of 7 years suffering from rhinitis, with headache, nervous symptoms, and cough, followed by gastro-intestinal pain, vomiting, and passage of muco-sanguineous stools which were found to contain numerous small maggots of an " Anthomyia " [probably Fannia]. Similar maggots had been noticed in the muco-purulent discharge from the nose. The case seems to have been treated happily with santonin.

A. A.

HERMS (W. B.). **Ophthalmomyiasis in Man due to** *Cephalomyia* (*Oestrus*) *ovis* (Linn.).—*Jl. Parasit.* 1925. Sept. Vol. 12. No. 1. pp. 54–56. With 1 text fig. [4 refs.]

This case occurred in Honolulu. The sufferer was a labourer in a chemical warehouse, and nothing is known whether or not he had any other occupation with sheep, goats, etc. Three small (about 1 millim.) larvae were found extremely adherent to the conjunctiva, which was inflamed and ulcerated; they were identified by the author as *Oestrus ovis*. The author gives a brief account of the appearance and habits of the fly, which deposits in larvae on the wing, by striking the eye or nostril of the victim, and he also refers to published cases of ophthalmomyiasis in man, and gives a figure of the first-stage larva of *Oestrus ovis*.

A. A.

YAMASAKI (S.) **On Myiasis interna.**—*Taiwan Igakkai Zasshi* (*Jl. Formosan Med. Soc.*). 1925. Sept. No. 246. English summary p. 5. [In Japanese.]

In the faeces of a young man under treatment for ankylostomiasis 45 maggots of a fly were found. The patient was therefore instructed to evacuate into a pot and to bring the evacuation, carefully protected and quickly, for examination In this material 15 maggots were found and were bred out and identified as Sarcophaga Thereafter the patient's symptoms disappeared, although eggs of ancylostoma were still being passed

A A

JEWETT (M L). **Case of Larvae of Fly in Tympanum.**—*Canadian Med Assoc Jl* 1925 Oct Vol 15 No 10 pp 1053–1054

The man in this case had a bloody discharge from the ear and complained of tinnitus and intense irritation of 5 days' duration A maggot was removed from the depth of the external meatus and through a small opening in the membrane another was observed in the tympanum On instilling 2 minims of chloroform into the perforation in the membrane the second maggot, which had been indifferent to other treatment, came forth into the meatus whence it was removed easily

A A

SÉGUY (E) Etude sur quelques muscides exotiques à larves parasites [**Exotic Muscidae with Parasitic Larvae.**]—*Bull Soc Path Exot* 1925 Nov 11 Vol 18 No 9 pp 732–735

This paper contains the diagnosis of a new genus of blowflies—*Roubaudiella*—and a key for distinguishing 18 genera of these flies (Calliphorinae) Séguy calls them all exotic flies having parasitic larvae, but, since Calliphora and Lucilia are among them his definition of the term parasite must be an extremely broad one

A A

GIRARD (G) & LEGENDRE (F) Premières observations sur les puces de rat des régions pesteuses de Madagascar [**Rat Fleas of Plague Regions of Madagascar.**]—*Bull Soc Path Exot* 1925. Nov 11 Vol 18 No 9 pp 730–731

At Tananarive, where (at an elevation about 4,000 ft) there is a distinct alternation of seasons between hot-and-damp and cold-and-dry, as at Tamatave, where it is perennially hot and damp, *Xenopsylla cheopis* is the predominant rat-flea The other rat-fleas found at Tananarive were *Ctenopsylla musculi* (25 per cent of 1,675 examined), and *Echidnophaga gallinacea* (15 per cent), and at Tamatave *E gallinacea* All the rats at Tananarive were *Mus rattus* var. *alexandrinus*

A A.

PAWLOWSKY (E N) & SILIN (A K) Experimentelle Untersuchungen ueber die Wirkung der Flohe auf den Menschen [**Flea-Bites: Experimental.**]—*Arch f Schiffs- u Trop-Hyg* 1925 Aug 1 Vol 29 No 8 pp 387–400 With 4 text figs [4 refs]

This is about the action of the saliva of the flea, which is compared with that of the bloodsucking lice of man The flea's saliva (dog-flea and man-flea) merely causes roseola and "purpura pulicosa" with slight local hyperaemia

A A.

ODAKA (Yoshiwo). **[On the Flea Killing Power and other Vermicidal Power of Carbon Tetraoxyd.]**—*Iji Shimbun (Med. News).* 1925. May. No. 1164 [Summarized in *Japan Med. World.* 1925. July 15. Vol. 5. No. 7. pp. 183–184.]

It is here asserted that "the combined preparation of carbon tetrachlorid and carbon tetrachlorid-cresol soap solution has been found to be one of the best flea exterminators hitherto known."

A. A

DE BERGEVIN (Ernest). Les hémipteres suceurs de sang. Espèces se révélant occasionellement suceuses de sang humain. Description d'une nouvelle espèce d'Athysanus (Hémiptère-Homoptére) suceuse de sang humain de l'Extrême-Sud algérien. **[Occasional Bug Blood Suckers. A New Species of Athysanus sucking Human Blood in South Algeria.**—*Arch. Inst. Pasteur d'Algérie.* 1925. Mar. Vol. 3. No 1. pp. 28–44. With 9 text figs. [5 refs.]

This is an annotated list, with some beautiful figures, of some bugs that have been known to bite people. Besides the parasitic Cimicidae and Polyctendidae and the predaceous Reduviidae, the following are here noticed: of the family Lygaeidae, *Leptodemus minutus* and *Geocoris henoni* and *G. scutellaris*; of the family Capsidae, *Brachynotocoris puncticornis*; of the family Jassidae, *Athysanus vulnerans*, *Thamotettyx* 3 sp., and *Deltocephalus* sp. This is by no means an exhaustive list of bugs that may chance to bite people.

A. A.

HINDLE (Edward) & DUNCAN (J. T.). **The Viability of Bacteria in** *Argas persicus.*—*Parasitology.* 1925. Oct. Vol. 17. No. 4 pp. 434–446. With 3 figs. on 1 plate & 2 text figs [7 refs.].

A well-devised and interesting series of experiments, suggested by the fact that the alimentary tract of the tick is consistently free from bacteria although ticks must often imbibe infected blood, is here recorded. The tick chosen for them is *Argas persicus*, as being a manageable tick, feeding to repletion fairly quickly. The authors let the ticks bite and feed through animal membrane tautly covering suspensions of various bacteria in normal inactivated horse-serum, the ticks first being deprived of any discretion in the matter by the removal of the tarsus of the first pair of legs where their gustatory guidance is seated (Haller's organ). This is a ruse originally devised by Hindle and MERRIMAN, and its adaptation to the present investigation is here described fully and figured, along with all other details of technique and facilities of procedure.

The authors find that *Bacillus anthrax*, *Streptococcus faecalis*, and *B. subtilis* can survive—the first two "indefinitely"—in the tick's stomach, and are passed in its faeces. For, although the contents of the stomach, tested *in vitro*, are bactericidal, some bacilli (or spores in the case of anthrax) can survive a heavy infection, and, as a matter of fact, a fully virulent culture of anthrax was obtained from faeces passed on the hundredth day. (*B. mycoides*, though a spore-bearer, did not survive long or appear in the facees). *B. subtilis* seemed to behave like anthrax. *S. faecalis* was entirely resistant to the bactericidal and inhibitory influences of the stomach.

B. typhosus survived in the stomach for at least 22 days, but was never recovered from the faeces—a problem for future solution, since no bactericidal or inhibitory principles were discovered in the tick.

Staphylococcus aureus died out very quickly, the stomach contents being powerfully lethal to it, *in vitro.*

(Tests with *B. pestis* and *melitensis* were inconclusive, as both died out quickly in the horse-serum used in feeding.)

In all cases the micro-organisms tested remained within the alimentary tract, not reaching the coelom, and defaecation was the only process of removal from the tick; and since defaecation occurs only at long intervals, and not while feeding, it seems unlikely that *Argas persicus,* at any rate, can be an effective carrier of any of the organisms tested.

The bactericidal principle was found in not one of the various suspensions of tissues investigated, and only in one doubtful instance in the coelom. It and the inhibitory principle are still under investigation; it is clear, at present, that they are not in the horse-serum used in feeding, and are independent of an alexin.

A. A.

JUILLET (A.) & DIACONO (H.). Essai de destruction du pou de corps ou de vêtements " Pediculus corporis " de Geer par les émulsions savonneuses d'oléo-résine de pyrèthre de Dalmatie (chrysanthème insecticide). **[Destruction of the Body Louse by Soapy Emulsions of Oleoresin of Pyrethrum.]**—Reprinted from *Bull. des Sci. Pharmacologiques.* 1925. July & Aug.-Sept. Vol. 32 32 pp. [52 refs.] Also published as Notice No. 20 of the Office Nat. des Matières Premières végétales pour la Droguerie et la Parfumerie. 12, Avenue du Maine, Paris XV.

Dalmatian powder (pulverized capitula of *Pyrethrum cinerariifolium*) having lately suffered some disparagement as a pedicide, the authors have investigated its insecticidal properties—and particularly its action upon both Pediculus and Phthirius—in the form of an extract. They here describe the result of their operations, at full length and in the minutest detail—the toxicity of the powder, the active principle and the methods of its extraction (preferably with ethylene trichloride), the manufacture of a potash soap and the effects upon lice of an alkaline emulsion of this *savon pyréthre.* In the optimum dilution, which appears to be 20 per cent., this soap is mortal to lice in 20 minutes.

A. A.

BRAUN (L. I. B.). **Notes on Desensitization of a Patient Hypersensitive to Bee Stings.**—*S. African Med. Rec.* 1925. Sept. 26. Vol. 23. No. 18. pp. 408–409.

An extreme case of idiosyncrasy to bee-venom in a woman of 32 years who appeared normal in every other way. Prior to the author's observations, here recorded, she had, in the course of 9 years, been stung on seven occasions, and in each instance by a single bee, and on each occasion the agony and terror had been worse than before.

Within 30 seconds or a minute of being stung, symptoms begin—a hot flush all over the body, pains as of travail, and an agonized sensation of impending suffocation, then a general trembling, followed by a comatoid stage, which may last 3 or 4 days. Objectively, the tips of the digits are livid, and wheals spread from the site of the sting all over the body so as to cause a general superficial swelling.

The author describes his attempts to "desensitize" the patient, who lives in a district of wild bees. A course of peptone and intravenous injections of calcium was found by experiment to be of no effect; but immunization by the ordinary method—in this case applying first diluted bee-venom and then the actual venom, in gradually increasing doses, to the abraded skin—was so successful that even at the end of two weeks the patient could tolerate 1·5 cc. of venom so applied. She then heroically suffered herself to be stung by a bee, and after a delay of 10 minutes showed an "extremely mild" reaction.

A. A.

STERN (E.). Schwere Schockerscheinungen nach Wespenstichen. [**Severe Symptoms of Shock after Wasp Stings.**]—*Arch.f.Schiffs- u. Trop.-Hyg.* 1925. Sept. 1. Vol. 29. No. 9. pp. 450–452. [2 refs.]

Brief notes from Tiberias (Palestine) of two very serious cases of shock passing into semicoma or even actual coma, following wasp-sting. In one, a young man was stung about the head and neck and hands and feet by a swarm of wasps; in the other, an elderly woman was stung in the hand by a single wasp. In the later case (anaphylaxis) the symptoms were the more serious, and included deep and general cyanosis. Both cases were treated with camphor and caffein and with 20 cc. of Calmette's polyvalent antivenomous serum; in the first case recovery was rapid, but in the second case (which also received 1 cc. of a 1 in 1,000 solution of adrenalin) recovery was protracted.

A A.

WADA (Hiratake). Klinische und experimentelle Untersuchung ueber die durch Giftraupe, *Dendrolimus spectabilis* verursachte Dermatitis und ihre Ursache. (I. Mitteilung). [**Investigation of the Dermatitis caused by the Caterpillar** *D. spectabilis* **and its Cause.**] —*Japan. Jl. Dermat. & Urol.* 1925. Aug. Vol. 25. No. 8. German summary pp. 91–92. [In Japanese pp 646–679. 42 refs.]

The dermatitis caused by the nettle-hairs of the lepidopterous caterpillar *Dendrolimus spectabilis* is an ardently itching nettlerash, lasting as such for a few hours, or perhaps a day, but not fading entirely for a week or two. The hairs, which stand in tufts on the dorsum of the first two segments of the body, are finely barbed and are hollow throughout; each has at its base 2 large, often multinucleate cells, the protoplasm of which extends into the hollow shaft of the hair. A watery, or saline, or glycerine extract of these hairs can produce a slight dermatitis; but an extract in alcohol, or ether, or benzol, or chloroform can cause an unmitigated inflammation. The author's conclusion that the dermatitis caused by the hairs of the caterpillar is essentially toxic and not merely mechanical thus appears to be established.

A. A.

MILLS (P S) **Interesting Effect of an Insect Bite.**—*Indian Med Gaz.* 1925 Oct Vol 60 No 10 p 473

Case of an Indian Mahomedan boy of 11 years stated to have been bitten in the foot by a sort of dung beetle known in the vernacular as *chharbinda* The bite caused burning pain throughout the leg and lasting for a few hours, but the more extraordinary effect was a priapism of astounding intensity and persistence It lasted for about five days after the commencement of treatment in hospital and is stated to have begun at the time of the bite, about five days before admission There was nothing abnormal in the urine, though micturition was painfully difficult

A A

COWDRY (E V) **The Occurrence of** *Rickettsia* **like Microorganisms in Adult "Locusts"** (*Tibicen septendecim* **Linn.**).—Reprinted from *Biol Bull* 1925 Jan Vol 48 No 1 pp 15–18 With 1 plate

The Rickettsia like "microorganisms" were found in sporadic masses in the lumen of the alimentary canal and Malphighian tubules seldom within cells none was detected in the ovaries

A A

HELWIG (Ferdinand C) **Arachnid Infection in Monkeys** (*Pneumonyssus Foxi* **of Weidman).**—*Amer Jl Path* 1925 July Vol 1 No 4 (Whole No 4) pp 389-395 With 7 figs on 2 plates [17 refs]

In the routine of work 6 monkey cadavers in a batch of 9 were found to have pulmonary lesions suggestive of tuberculosis 3 of the 6 had no other lesions of any sort The lesions were small superficial cysts having a thick wall of granulation tissue, and part filled with yellowish débris Each lung contained from 20 to 40 of them On macerating the débris in caustic potash solution it was found to contain little mites of the species *Pneumonyssus foxi*—a well known parasite of the lung of monkeys In some of the cysts as many as 20 mites were found The 3 monkeys in which no other lesions were observed than these superficial pulmonary cysts had during life, been subject to very frequent paroxysms of coughing and sneezing

The author takes occasion to refer to numerous and varied cases of acariasis of the viscera in man—some of which are undoubtedly authentic

A A

MIRTL (Carl) Mehlmilben (*Tyroglyphus farinae*) als pathogene Schmarotzer beim Menschen? [**Mealmites as Pathogenic Parasites o Man.**]—*Muench Med Woch* 1925 Sept 18 Vol 72 No 38 p 1598

In cases of disorders of the digestive and urinary organs (altogether 42 in number) investigated in the course of five weeks mites (*Aleurobius farinae*) were found in the urinary sediment in 10 instances, the urine not having been drawn by catheter The author seems to incline to the opinion that, since food-mites can get into the human intestine and cause trouble there [on which point there can be little doubt], it is not unreasonable to suppose that they may find their way into the urinary bladder and cause irritation there [Cf this *Bulletin*, Vol. 20, p 473, and Vol 21, p. 156, and on the other side of the question Vol 21, p 155]

A. A.

WERTHEIMER (Joseph) Ueber Milbenbefunde im Stuhle **[The Discovery of Mites in Stools.]**—*Muench. Med. Woch* 1925 Nov. 6 Vol. 72 No 45 pp 1920–1921.

The author's sole experience in one case has taught him the very plain and simple lesson that the mere finding of ***dead*** mites in a stool from a patient having dysenteric symptoms is, by itself, no proof that mites are a cause of dysentery.

A A

KIMURA (Tetsuji) SUDA (Hideji) & KISHIDA (Kyukichi) **On the Mites (Acarina) found in Urine of the Japanese.**—*Sei-I Kwai Med Jl* 1924 Oct Vol 43 No 5 (Whole No 477) English summary p 12 [In Japanese] [Also summarized in *Japan Med World* 1925 Mar 15 Vol 5 No 3 pp 74–75]

During 10 days' observation of the urine of a case of chronic nephritis the authors found 12 specimens of adult mites which were referred to 3 species—*Tarsonemus latissimus* and *Tyroglyphus longior* and *ovatus* [In the absence of other desirable detail compare this *Bulletin,* Vol 21, p 155]

A A

HIRST (Stanley) **On a Harvest Bug** (*Leeuwenhoekia australiensis* **sp. n.**) **attacking Human Beings at Sydney, New South Wales.**—*Trans Roy Soc Trop Med & Hyg* 1925 June 18 Vol 19 No 3 pp 150–152 With 3 text figs

The habits of this harvest mite and their effects upon human beings are very much the same as those of British harvest mite The creatures are said to be active throughout the Australian summer—October till April

A A

i HIERONYMI (E) Ueber Milbenbefunde im Stuhl **[Discovery of Mites in the Faeces.]**—*Muench Med Woch* 1925 Dec 11 Vol 72 No 50 p 2157

ii HARADA (Sadaji) **[On a Case of Tick found in Human Urine.]**—*Chugai Iji Shimpo* (*Central Med Jl*) 1925 July Vol 44 No 14 [Summarized in *Japan Med World* 1925 Sept 15 Vol 5 No 9 pp 251–252]

iii SEYDEL (Ch) Les tiques **[Ticks of the Congo.]**—*Bull Med du Katanga* 1925 Aug Vol 2 No 4 pp 161 164

iv JOHNSTON (H B) [*Heliothrips indicus* **(Bagnall) injurious to Man in the Sudan.**]—*Ent Mo Mag* London 1925 June Vol 61 pp 132–133 [Summarized in *Rev Applied Entom* 1925 Aug Vol 13 Ser B Pt 8 p 129]

v FRIEDERICHS (K) Beobachtungen an Simuliiden in Ost Java **[Observations on Simuliidae in East Java.]**—*Beihefte z Arch f Schiffs- u Trop-Hyg* 1925 Vol 29 No 1 pp 119–125 [2 refs]

vi CAVASSA (Nicolas F) Un caso de miasis cutánea **[Case of Cutaneous Myiasis.]**—*Cronica Med* Lima 1925 Apr Vol 42 No 742 pp 102–103

i A corrective to WERTHEIMER'S (above) rather naive paper

ii The "tick" here spoken of as having found its way—probably from the pubic hair—into human urine is not a tick but a small mite of the genus Tarsonemus

iii Some familiar generalities on ticks and a list of 30 species found in the Congo

iv. This thrips—a cotton pest in the Sudan—is recorded as biting man, the bite causing severe irritation followed by inflammation and—in one case—by slight "poisoning."

v. Three species of Simulium—*argyreatum*, *iridescens*, and one near *atratum*—in eastern Java and none is troublesome to man.

vi. Nothing noteworthy. A larva extracted is said to have had the characters of Gastrophilus.

A. A.

i. WALL (F.). **A Case of** *Echis carinatus* **(?) Poisoning. Failure of Calcium as a Therapeutic Agent. Death in 86½ Hours.**—*Indian Med. Gaz.* 1925. Oct. Vol. 60. No. 10. pp. 470–471.

ii. SINGH (S. A. S. Chuhar). **A Fatal Case of Snake-Bite** (? *Echis carinatus*) **during Pregnancy.**—*Ibid.* pp. 471–472.

iii. ——. **A Fatal Case of Snake-Bite** (? *Echis carinatus*).—*Ibid.* pp. 477–478.

i. The snake was not seen in this case, but, apart from the significant symptoms, good reasons are given for the conclusion that it was an *Echis carinatus.*

The patient was a young sepoy, who did not say anything about having been bitten by a snake until about 4½ hours after the event; the bitten foot was then swollen and very painful, and the man felt faint. Treatment was instituted—tourniquet; and solid $KMnO_4$ rubbed into an incision—as if for a sudden bite, and 40 cc. of antivenom [? Kasauli] given intravenâ. Symptoms of general haemolysis began about 9½ hours after the infliction of the bite and continued unabated—in spite of treatment with adrenalin, pituitrin, haemostatic serum of Parke Davis, and intramuscular injections of calcium lactate; besides strychnine, morphia, and rectal injections of saline—until death during the 87th hour.

ii. The snake in this case was said to be a *landai* (Baluchi name for Echis). The patient was a woman about 30 and about 5 months in pregnancy. She was seen about 11 hours after being bitten on the ankle; in the 76th hour she brought forth a dead foetus; and in the 92nd hour she died. Her symptoms were pain (local and general), swelling, multiple bleedings, weakness and drowsiness. The treatment is not described.

iii. Another case of a Baluchi woman bitten on the left ankle by a *landai*. She was seen 2 hours afterwards and then treated locally with $KMnO_4$ and a subcutaneous injection of calcium chloride. Haemorrhages began during the 5th hour and recurred almost to the last. Pain and swelling were marked features, the swelling involving the whole left leg and also the trunk, shoulder and head on the left side. Death occurred in the 74th hour. Treatment by adrenalin, calcium chloride, hypertonic injections, inhalations, and stimulants was of no avail.

A. A.

BHARADWAJA (A. C.). **A Case of Cobra Bite successfully treated with Fitz-Simson's** (*sic*) **Polyvalent Anti-Venomous Serum.**—*Indian Med. Gaz.* 1925. Oct. Vol. 60. No. 10. p. 472. With 1 text fig.

The snake in this case was captured and is photographed in a truculent attitude alongside the object of its spite—a young Indian woman.

The bite was in the fold of skin between the thumb and index finger. Two ligatures were applied at the time, one at the wrist, the other at the elbow, but the patient did not receive further treatment until the 6th hour. She then showed symptoms of facial and lingual paralysis, and of collapse. The arm was much swollen [but the ligatures had not been loosed]. The usual ceremony of local treatment was carried out and a subcutaneous injection of strychnine and an intravenous injection of Fitz-Simon's serum given, and repeated 3 hours afterwards. At the 11th hour the patient was recovered and very lively.

A. A.

GRAHAM (George) **Transient Glycosuria following Scorpion Sting.** [Memoranda.]—*Brit.Med. Jl.* 1925. Sept. 26 p 566

The text here hardly justifies the title. A man, said to have been healthy, was bitten on the leg, in Java, by a large "spider," and the result of the bite is said to have been a local swelling, which lasted for a week and was followed by oedema and a blotchy rash on the legs, a feeling of limpness, and a sudden susceptibility to the effects of mosquito-bite Some [unstated] time afterwards, in Hongkong, sugar was found in his urine, and in Shanghai there was still sugar enough to determine a bad prognosis. When seen in England, nearly 16 weeks after being bitten, the man, though still weak, had normal sugar tolerance and no sugar in his urine.

A. A

i. CAIUS (J. F.) & STEICHEN (A.). **Notes on the Concentration of Anticobra Serum. II. Refractivity.**—*Indian Jl. Med. Res.* 1924. Apr. Vol. 11. No. 4. pp. 1163–1172. With 3 charts. [1 ref.]

ii. — —, IYENGAR (K. R. K.) & ANDERSON (L. A. P.). **III. Separation of the Proteins.**—*Ibid.* July. Vol. 12. No. 1. pp. 153–156. [7 refs.]

i. The question here approached is whether a material entity is included in antivenene: the present observers find that under similar conditions of concentration and temperature normal horse-serum and anti-cobra horse-serum are indistinguishable in refractivity.

ii. This is a further explanation of the paradox dealt with in No. 1 of this series (this *Bulletin,* Vol. 21, p. 158). Experiments here described show that in a given volume of an antivenomous serum the active neutralizing power is proportional to the amount of free antivenene present; that in anticobra serum the antivenene is partly free, and partly associated with the serum globulin; and that this associated antivenene can be set free from its globulin by addition of water. The amount of antivenene that can thus be liberated is in direct proportion to the amount of water added; but it must be remembered that in a given volume of anticobra serum the addition of a large quantity of water, although it sets free more antivenene, simultaneously dilutes it.

A. A.

i. KRAUS (R.) **Ueber die Bedeutung der Avidität der Antitoxine und deren Heilwert. Heilversuche mit Skorpionenserum (4. Mitteilung).**—*Muench Med Woch* 1924 Mai 14 Vol 71 No 11 pp 329–330

ii. —— **Ueber die Aviditat der Schlangensera (Weiterer Beitrag zur Bestimmung des kurativen Wertes der Sera). 5. Mitteilung.**—*Ibid* Mar 21 Vol 71 No 12 pp 362–363 [1 ref]

iii. —— **Studien ueber antitoxische Schlangen- und Antiskorpionensera.**—*Ztschr f Immunitatsf u Experim Therap* I Teil Orig 1924 Sept 18 Vol 41 No 2 pp 170–189

iv MAZZA (Salvador) **On the Action of the Poison of the Viper and the Cobra on the Caterpillar of** *Galleria mellonella*— *Jl Trop Med & Hyg* 1924 May 15 Vol 27 No 10 pp 109–110

v LÉVY (Robert) **Sur le mécanisme de l'hémolyse par le venin de scorpion. Comparaison avec d'autres venins.**—*C R Acad Sci* 1924 Nov 17 Vol 179 No 20 pp 1093–1095 [3 refs]

vi DOUGLAS (B) **Action empêchante de l'adrénaline sur l'absorption du venin de cobra par la peau.**—*C R Soc Biol* 1924 Dec 5 Vol. 91. No 34 pp 1223–1224 [2 refs]

vii. WELKER (William H) **Fractionation of the Proteins of Rattlesnake Venom.**—*Jl Lab & Clin Med* 1925 Jan Vol 10 No 4 pp 298–302 [2 refs]

viii WEISS (Nacif) **Anaphylaxie par les venins des Serpents sud-américains.**—*C R Soc Biol* 1924 June 13 Vol 91 No 20 pp 24–25

These all may be classed as academic papers

Nos. i to iii (Kraus) deal with such subtle matters as the property of certain snake-antivenoms to neutralize certain scorpion-venoms, both *in vitro* and *in vivo*, the "paraspecific" power of certain specific (i e, monovalent) antivenoms to neutralize the venom of other species, and the variability in specific applications of polyvalent antivenoms These and other such phenomena have led the author to distinguish between the still obscure neutralizing potentialities of antivenoms and their more obvious curative powers

No. iv (Mazza) shows how the caterpillar of the bee-moth, which can stand enormous doses of bacterial toxins and is indifferent to abrin, is very susceptible to viper and cobra venom

No v (Lévy) recounts observations and records experiments that lead the author to countenance the view that the haemolytic action of animal venoms in general is not direct, but requires a complementary substance, lecithin, and that it is this combination of toxin and lecithin that produces haemolysis

No. vi (Douglas) describes how the prior application of adrenalin to a superficially abraded skin slightly retards the effect of subsequent application of cobra venom to the abrasion

No. vii (Welker) discusses and describes experiments indicating that the toxic principle of rattlesnake venom can be separated from the toxic fraction of the proteins of the venom.

No viii (Weiss) Characteristic and markedly specific anaphylaxis obtained in the guineapig with the venom of 4 species of Lachesis

A A

i BRÁS DE SÁ (L J) **Clinical Notes on some Cases of Snake Bites treated by Antivenomous Serum.**—*Bol Ger Med e Farmacia* Bastora. 1924. July 9th Ser No 7 pp 306–308

ii RAIMUNDO (João Manoel) **Contribution à l'étude des soidisant secrets des herboristes indigènes contre les morsures des serpents vénimeux.**—*Ibid* pp 303–305.

iii KOBAYASHI (Chyokuro) [**Chlorcalcium Treatment of Adder Bite (Japanese Mamushi,** *Trigonocephalus blomhoffi*)]—*Osaka Igakkwai Zasshi* (*Jl Osaka Med Soc*) 1925 Jan Vol 24 No 1 [Summarized in *Japan Med World* 1925 July 15 Vol 5 No 7 p 188]

i Records successful use of Kasauli antivenom in cases of bite by Russell s viper *Echis carinatus*, and " unknown snakes "

ii Numerous reputed cures for snake-bite have been tested The remarkable statement is made that administration of 1 5 [? gm] of ginger-rhizome in 5 cc of water renders guineapigs tolerant of a lethal dose of cobra venom

iii States that an intravenous injection of 20 cc of a 3 per cent solution calcium chloride gave immediate relief from pain and quick recovery from toxic symptoms caused by the bite of *Lachesis blomhoffi*

A A

i RIBOLLA (Romolo) **L'ofidismo nei paesi tropicali.**—*Arch Ital Sci Med Colon* Tripoli 1923 May Vol 4 No 5 pp 135–155

ii KRAUS (R) **Ueber biologische Schlangenforschung.**—*Med Klin* 1924 June 8 Vol 20 No 23 pp 771–775 1 ref]

iii DO AMARAL (Afranio) **On the Biological Differentiation of the Neotropical Species of Snakes,** *Bothrops atrox* **(Linné, 1758),** *B jararaca* **(Wied, 1824) and** *B jararacussu* **Lacerda, 1884.**—*Amer Jl Trop Med* 1924 Sept Vol 4 No 5 pp 447–452 [9 refs]

iv DE MELLO (Oswaldo) **Commentarios sobre 96 observações de accidentes Ophidicos.**—*Sciencia Medica* 1925 Jan 31 Vol 3 No 1 pp 60–64 With 3 figs

None of these papers contains anything that necessitates notice here No ii (Kraus) is an interesting survey of the whole subject of snake venoms and antivenoms

A A

EVANS (H Muir) **The Poison Gland of Trygon.—Supplementary Note.**—*Proc Roy Soc* Ser B 1924 Sept 1 Vol 96 No B 679 pp 491–493 With 2 text figs

The author adds some descriptive detail and some rather sketchy figures of what he regards as a definite poison gland in the groove of the caudal spine of sting rays (Trygon) The species that furnished the material is mentioned only by its vernacular (Malay) name, *sengal pari*

A A

BRAZIL (Vital) & VELLARD (J) Contribuição ao estudo do veneno das aranhas —Immunização por via intradermica e por via subcutanea —Soro anti-ctenus Methodo de dosagem e primeira applicação no homem [**Study of Spider Venom.**]—*Brazil-Medico* 1925 Oct 17 Year 39 Vol 2 No 16 pp 224–227

—— & —— Contribuição ao estudo do veneno das aranhas Contribution a l'étude du venin des araignees —*Mem Inst de Butantan* 1925 Vol 2 No 1 pp 5–70 With 14 plates French summary pp 71–77 [89 refs]

The authors have studied the action of the venom of the following Neotropical spiders *Ctenus ferus* and *Ct nigriventer* *Trechona venosa*, *Nephila cruentata*, and *Lycosa raptoria* The most satisfactory material for purposes of study is a saline solution of glands that have been dried at 37° C. No haemolytic properties were observed in any of the specified venoms. The venom of *Ctenus ferus* and *nigriventer* was purely and extremely neurotoxic; for a rabbit of 1 kilogm. the minimum lethal intravenous dose of the former was 0·4 mgm., and of the latter 0·3 mgm., the animal dying paralysed after violent convulsions. That of *Trechona venosa* was only a few degrees less neurotoxic; the m.l.d. (same standard) being 0·6 mgm. That of *Lycosa raptoria* caused nothing more than severe local inflammation, and that of *Nephila cruentata* had only a local and a feeble effect.

A. A.

Houssay (B. A) & Mazzocco (P) Mécanisme de l'action des venins de serpents et de scorpions sur le muscle strié. [**Mechanism of Action of Snake and Scorpion Venom on Striated Muscle.**]—*C R Soc. Biol* 1925. Nov 6 Vol 93 No. 31. pp. 1120–1122

A formal paper containing details of the reactions of batrachian muscle-nerve preparations to venom in various chemical media

A. A.

Baerg (W J) [**The Effect of the Venom of some Supposedly Poisonous Arthropods.**]—*Ann Ent Soc Amer.* 1924. Vol 17 No 3. pp 343–352. With 7 figs [Summarized in *Experiment Station Rec* 1925 Aug Vol 53 No 2 p. 157]

The summary merely states that this paper deals with experiments upon man and rats with the venom of centipedes and scorpions.

A A

Pallary (P) Etudes sur les scorpions de la Berbérie [**The Scorpions of Berbérie.**]—*Arch Inst Pasteur d'Algérie* 1925. Mar Vol 3 No 1 pp 45–58 With 9 text figs [32 refs]

This is a systematic study, with plenty of clear line-drawings illustrating the characters used in the classification of scorpions and with a dichotomous table for the discrimination of genera and species

A A.

United States Naval Medical Bulletin. 1925. Sept.–Oct. Vol. 23 Nos 3 & 4 pp 316–320—**Three Cases of Food Poisoning attributed to eating Freshly Caught Fish—Yellow Jacks.**

Not all the men who ate of the fish—a species of Caranx or horse-mackerel caught off the Virgin Islands in the month of February—suffered; but particular care was taken to exclude any source of food-poison, other than this particular species of fish, from the diagnosis in the case of those who did suffer after eating the fish.

Symptoms began, from 4 to 5 hours after eating, with constitutional disturbance—headache, dizziness, general soreness of muscles, or even cramps in the legs, also ptosis and derangement of visual accommodation; colic and diarrhoea and vomiting followed. Mild purgation appears to have relieved the symptoms, but the soreness of the muscles continued for several days, and in one case the cramps in the legs persisted for more than a week.

A. A.

CAWSTON (F. G.). **The Smaller South African Shells that harbour Cercariae.**—*Trans. Roy. Soc. S. Africa.* Vol. 12. Pt. 2. pp. 13–15.

In searching for the intermediary molluscan hosts of trematode worms the novice is apt to take for the innocent young of large-sized species those numerous minute mollusca that are adult forms of small-sized species and by no means innocent. The author draws attention to some of these small mollusca that he has found variously infected in his survey of rivers and pools in South Africa. He instances a small Planorbis (near *gibbonsi*) having a shell seldom more than 5 mm. diameter, that harbours an amphistome cercaria 2·45 mm. long, and another even smaller Planorbis species infested with a distome cercaria 0·7 mm. long; also another Planorbid (*Segmentina planodiscus*) common around Durban and having a shell not more than 6 mm. diameter, and harbouring cercariae including those of a schistosome. Finally, he mentions a river-limpet, *Burnupia trapezoidea,* contained in a shell only 6 mm. long, infested with monostome cercariae 0·5 mm. long.

A. A.

BEQUAERT (M.) Note sur les mollusques du Katanga. [**The Molluscs of Katanga.**]—*Bull. Méd. du Katanga.* 1925 Aug. Vol. 2. No. 4. pp. 165–166.

The author has found the following snails of medical and veterinary importance in Katanga: *Bullinus adamsoni* (intermediate host of *S. haematobium*), *Planorbis guettera* (intermediate host of *S. mansoni*), *Limnaea* spp. and *Melania* spp.

T. W. M. C.

CAWSTON (F. G.). **A Contribution to the Study of the Radulae of Fresh-Water Mollusca.**—*Jl. Trop. Med. & Hyg.* 1925. Oct. 15. Vol. 28. No. 20. pp. 365–366. With 1 text fig. [7 refs.]

The radula of Gastropod mollusca affords characters of importance in the classification of species, genera, and families, and the author here figures and describes the form and arrangement of its teeth in some of the fresh-water and lagoon molluscs of S. Africa, with regard to the identification of species that are intermediary hosts of trematodes.

A. A.

BEQUAERT (J.). **The Arthropod Enemies of Mollusks, with Description of a New Dipterous Parasite from Brazil.**—*Jl Parasit* 1925. June. Vol 11. No. 4. pp. 201–211. With 1 text fig. [30 refs.]

This is an academic paper based on a description of a new type of a Sarcophagid fly that appears to be destructive to snails in Para (Brazil). In the introduction an account is given of the Arthropod enemies of Mollusks; these include mites, carnivorous beetles (aquatic and otherwise), sarcophagine, calliphorine and other muscid flies, and phorid flies.

A. A.

DELANOË (P.). De la rareté du surmulot à Mazagan. **[Rarity of Brown Rats in Mazagan [Morocco].]**—*Bull. Soc. Path. Exot.* 1925. Feb. 11. Vol. 18. No. 2. pp. 152–153. [1 ref.]

The author has already remarked upon the rarity of the brown rat at Mazagan; he now reports that of 1,106 rats caught there in the latter half of the year 1924 not one was a brown rat. The common rat of Mazagan is *M. alexandrinus*.

A. A.

ANDERSON (Ch.). Présence de *Bullinus contortus* dans l'oasis de Biskra (Algérie).—*Bull. Soc. Path. Exot.* 1925. Mar. 11. Vol. 18. No. 3. pp. 267–268. [1 ref.]

BACHER (Stefan), KRAUS (Rudolf) & LOWENSTEIN (Ernst). Ueber Toxoide. III. Mitteilung. Zur Frage der aktiven Schutzimpfung gegen Schlangengift.—*Ztschr. f Immunitätsf u. Experim. Therap.* 1925 Oct. 31. Vol. 45. No. 1. pp 93–96. With 1 plate.

BOREL (E.). Contribution à l'étude des moustiques de l'Indochine.—*Arch. Insts. Pasteur d'Indochine.* 1925. Oct. No 2 pp 222–234 With 3 plates. [9 refs.]

BRUNI (N.) Recherches sur quelques phytoparasites de nature protozoaire.—*Bull Soc Path Exot* 1925 Mar 11 Vol 18 No 3 pp 251–257. With 3 text figs. [14 refs.]

CATANEI (A.) Anophèles de hautes régions de la Corse Présence d'*A bifurcatus* L. et d'*A. plumbeus* H et S dans l'île.—*Ibid.* Oct 14 No 8 pp 655–657. [1 ref.]

EVANS (A M.). Notes on Culicidae collected in Sierra Leone, with Descriptions of a New Species and a New Variety.—*Ann. Trop Med & Parasit.* 1925. Mar. 31. Vol. 19. No. 1. pp. 119–126. With 1 plate [2 refs.]

——. A New Variety of *Anopheles marshalli*, from Sierra Leone.—*Ibid.* Dec. 16. No. 4 pp 461–464. With 1 plate

FERRIS (G. F.). Fourth Report upon Diptera Pupipara from the Philippine Islands.—*Philippine Jl. Sci.* 1925. Nov. Vol 28. No 3 pp 329–341. With 5 text figs

KOFOID (Charles A.) & SWEZY (Olive). Karyamoebina substituted for Karyamoeba, with a Note on its Occurrence in Man.—*Univ California Public Zool.* 1925. Apr. 10. Vol. 26. No. 22 pp 435–436 [2 refs.]

MARTINI (E.). Zur Kulizidenfauna Südostrusslands.—*Arch f Schiffs-u Trop-Hyg.* 1925 Oct. 15. Vol 29. No. 10. pp 514–518

POPOV (P.) On the Discovery of *Phlebotomus caucasicus* Marzinovsky 1917 in the Turkestan, Afghanistan and Bukhara and the Difference between it and *Phlebotomus sergenti*, Parrot 1917.—*Rev. Microbiol. & Epidémiol* 1925. Vol. 4. No 2. English summary pp. 117–118 With 4 figs. on 1 plate. [In Russian pp. 88–96.]

SENEVET (G.). Description des nymphes de *Rhipicephalus bursa* et de *Hyalomma lusitanicum* avec un tableau pour la détermination des nymphes des ixodidés algériens.—*Arch Inst. Pasteur d'Algérie* 1925 Mar. Vol. 3. No. 1. pp. 59–63. With 3 text figs.

TUBERCULOSIS IN THE TROPICS.

ALLAN (Peter). **Report of Tuberculosis Survey of the Union of South Africa.**—38 pp. With 6 charts. [U.G. 18–24.] 1924. Cape Town: Cape Times, Ltd., Govt. Printers. [Price 2s. 6d.]

Dr. Allan, who had been appointed a Medical Inspector in the Department of Public Health of the Union of South Africa in 1920, was selected, owing to his previous experience of tuberculosis, to carry out a general survey of the Union in relation to the distribution of this disease, and the Report now under consideration is the result. To quote from the " Minute Transmitting " which introduces the Report," In contrast with the ' question and answer ' method followed by the Tuberculosis Commission of 1912–14, it was arranged that he should personally visit the principal urban centres and the large native areas of the Union, obtain all available information *in loco*, personally verify as far as possible all data and particulars, and make such further investigations and enquiries as were practicable under the circumstances." This programme was an extensive one, and we think that Dr. Allan is to be congratulated upon his success in dealing with a very difficult problem. The following figures will give some idea of the populations dealt with :—

Population and its Composition, as at 1921 *census*

	Male	Female	Total.
White	782,035	737,453	1,519,488
Native (mainly Bantu) ..	2,382,397	2,315,416	4,697,813
Asiatic	97,336	68,395	165,731
Mixed and other coloured ..	275,224	270,324	545,548
Total	3,536,992	3,391,588	6,928,580

Density of Population per square mile as at 1921 *census*

	Cape	Natal	Transvaal	O F.S.	Union.
White	2·36	3·90	4·92	3·76	3·22
Coloured and Native ...	7·69	36 56	13·98	8·72	11·42
Total	10·05	40·46	18·90	12·48	14·64

Within these general figures there are, of course, very wide variations of density of population, Johannesburg, for instance, having a density for all races of 1,587·85 per square mile, while Gordonia has a density of but 0·73 for the same space ; and this factor of density of population has an important bearing on tuberculosis.

Dr. Allan had much difficulty in obtaining reliable statistics, and the figures upon which his Report is based leave much to be desired. In the great cities of the Union, of course, satisfactory records are kept, but in really interesting parts, such as the Transkei, the material for analysis is almost nil, and the investigator is obliged to have recourse to the records of local practitioners and hospitals There is a short note on "Previous Information regarding Tuberculosis" on p 3 in which the following interesting passage from Theal's "History and Ethnography of South Africa" is quoted —

"He (the European) might recover perfect health in this dry climate, while they (the Hottentots) might perish, *as so many of them have done from that disease* it being new to them"

It is worthy of note that tuberculosis was then widespread amongst the Hottentots and "*was new to them,*" a fact the significance of which did not escape the author MOODIE is quoted as stating, in 1830, that tuberculosis was uncommon among the Dutch and English settlers but "was frequent among the Hottentots" Allan, discussing the conditions of life in South Africa, says that "many different standards of living are found, from that of the European, equal to the best standard in European countries, through various grades to the 'poor whites' whose standard of living is very low there are also various grades among the mixed coloured and also among the natives, from the educated native to the 'Red' Kaffir in his kraal" In Cape Town, reliable statistics have been kept since 1902, and from this source Allan has compiled his Graph I which is here reproduced

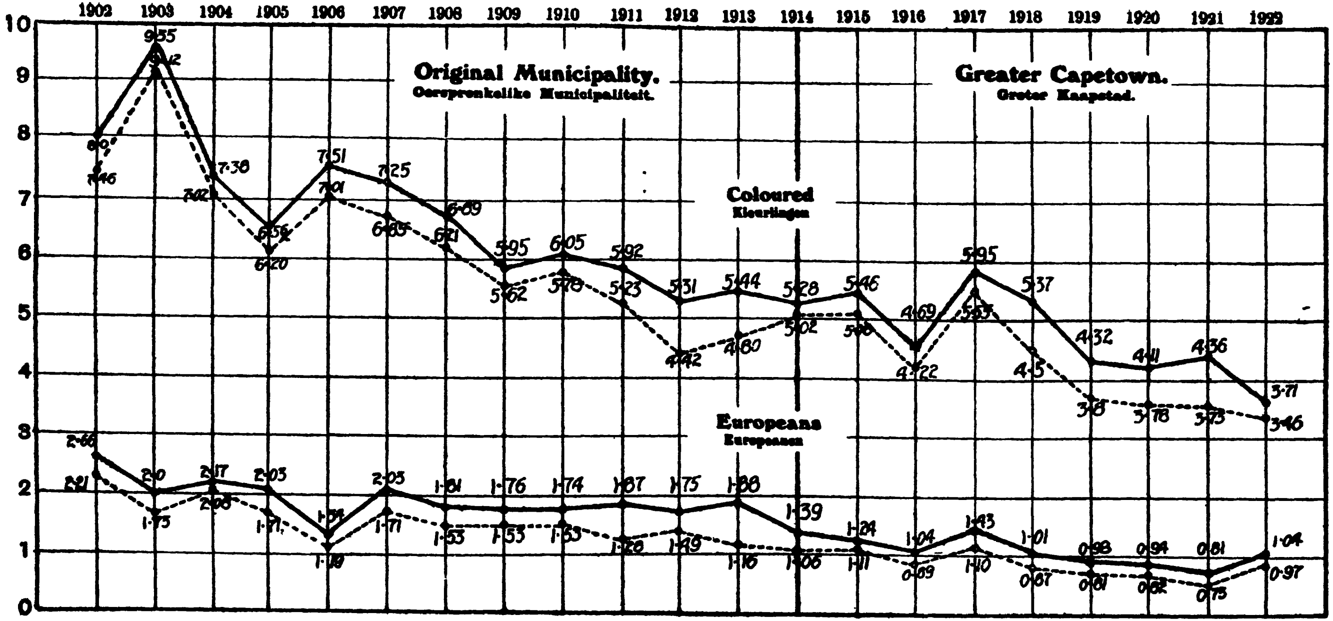
This Graph, while giving an idea of the very heavy death rate amongst the coloured population as compared with the whites, shows that a wonderful change for the better has taken place within the last twenty years, an improvement comparable, for the coloured population, with that which has occurred in England and Wales since 1851, and very probably due to similar causes It is of interest to hear that in the "mixed coloured" community the disease, though more prevalent than amongst the Europeans, still follows much the same course To quote the author, "the mixed coloured population of Cape Town has developed a considerable degree of immunity to tuberculosis' In the midland and eastern districts of the Cape Province the death rates from all causes and from tuberculosis are high in all the locations From a table on page 9, the following figures, referring, doubtless, to native populations, are abstracted —

	Names of Locations				
	Kabah	Oat lands	Doorn hoek	Basuto	Gubbs
Death rate per 1 000 living	48 33	76 36	95	45	74
Death rate from Tuberculosis	6 11	21 81	12 5	7 5	8

These death rates, especially that for Oatlands where the housing of the natives is very bad, are exceedingly high From the point of view of "Tuberculosis in the Tropics,' the highest interest centres, of course, upon the investigations in the Transkei, but these, for reasons beyond the control of Dr Allan, are unsatisfactory and inconclusive It is clear, from hospital records and reports by local doctors, that tuberculosis is very prevalent amongst the natives. "About 10 per cent of the total patients admitted [at Umtata Hospital] are tubercular, and these are only the worst cases, as the hospital is not intended for tuberculosis" Case records taken out by the author from the case notes of Dr. DREWE showed that from 10

CITY OF CAPETOWN.

DEATH RATE PER 1,000 OF POPULATION FROM TUBERCULOSIS, 1902–22



Crude Death Rate, —— Corrected Death Rate, ------.

Persons dying within 6 months of their residence in Capetown are classed as Non-Residents The number of such persons is deducted from the total Tuberculosis Deaths, and this gives the balance as the Corrected Death Rate.

to 14 per cent. were diagnosed as suffering from tuberculosis. Clinical details of a few cases examined by the author are given and afford evidence of the establishment of some resistance, inasmuch as the lesions were found to be relatively chronic in type.

Dr. Allan concludes that, while the disease is widespread and has latterly increased in frequency, the clinical type is less acute than formerly. " Under his natural conditions of life, there is evidence that the native has acquired a considerable degree of resistance to the disease." An interesting attempt to ascertain the after effects of industrial infection on the Rand consisted in the tracing of " boys " repatriated owing to tuberculosis. Dr. Allan succeeded in following up 112 such " boys," finding that 65, or 58·2 per cent., had died. Of the 47 survivors, 28 had recovered sufficiently to work, 10 had improved, but were not working, 8 were seriously ill, and in one no report was obtainable. That 25 per cent. of these infected natives should be " well and at work " is a remarkable and hopeful fact showing, as it does, that tuberculosis, in the primitive tribesmen, has a tendency to recover if the individual is placed under his natural surroundings—just as does the tuberculosis of children, even at the most susceptible age-periods, in this country. " In only 4 instances among the 112 repatriated 'boys' traced was there any occurrence of tuberculosis in relatives." This interesting note would be more valuable if the time elapsing since repatriation were recorded and, more especially, if tuberculin tests on the " contacts " had been possible. Writing of the tuberculosis in Natal, Dr. Allan quotes some interesting facts from the records of Dr. WILDISH of Eshowe, who states that " about 10 years ago, he often saw as many as 5 cases of tuberculosis in natives in one day, whereas, in 1921, out of 3,000 natives seen, there were only 50 such cases . . . He thinks that the decline in incidence is due to better feeding and education, the natives being impressed with the infectious nature of the disease. He quoted instances where the total inhabitants of a kraal died of tuberculosis, infection being due to a careless consumptive."

Dr. WILDISH also mentioned an interesting condition often seen in natives, " a skin tuberculosis, spread by wearing beads which have been worn by someone with tubercular sinuses," which Dr. Allan states to correspond to the skin conditions sometimes seen in butcher's and known as " butcher's warts." A table on page 21 sets out the death rates from tuberculosis amongst Indians in Natal from 1904 to 1921, and shows that a remarkable fall has taken place as from 1911 onwards.

Under the section dealing with " Tuberculosis among Natives in Industrial Employment," the following interesting figures are given: —

Year.	Tuberculosis.		Silicosis.		Tuberculosis with Silicosis.		Total Wastage from the Three Causes shown	
	Repatriations.	Deaths	Repatriations.	Deaths.	Repatriations.	Deaths.	Repatriations.	Deaths.
1916 ...	376	139	73	10	44	28	493	177
1917 ...	510	117	69	8	66	9	645	134
1918 ...	501	132	57	12	65	9	623	53
1919 ...	438	105	84	18	127	20	649	143
1920 ...	602	122	97	17	121	30	820	169

As the author remarks, the increase in repatriations from 1916 to 1920 is significant. An important note on "The Type of Tuberculosis seen Post-Mortem in Native Mine Labourers on the Witwatersrand" deserves quoting in full:—

"The type is most acute and generalized in East Coast boys, and most nearly approaches that of Europeans in the Cape Colony natives In other words, the generalized or 'infantile' type occurs in natives from areas where contact with Europeans has dated from comparatively recent times, whereas natives from areas in which European influences have been longer at work suffer from a more chronic and localised type of tuberculosis These latter natives have acquired a certain degree of immunity"

In the Résumé of Results of Survey on pages 28 to 30, Dr. Allan briefly sums up his findings and hazards a few conclusions. He gives four factors in influencing the "Index of Tuberculosis Mortality," which are as follows:—

"(*a*) Susceptibility of the different races and individuals to tuberculosis.
"(*b*) Chances of infection and degrees of infection
"(*c*) Resistance of infected persons to the disease
"(*d*) Economic conditions

"All these factors," he continues, "are inter-dependent The high susceptibility of certain races may be due to the fact that the disease is comparatively new to them so that they have had no chance of developing immunity" Further on he points out that "all the available information indicates that the disease is fairly wide-spread among the natives in the Transkei and Ciskei, and that its prevalence is slowly increasing The native seems to be acquiring a certain amount of immunity to the disease"

The paragraph on the "Causes of Tuberculosis," and on the "Prevention and Treatment of Tuberculosis" are far less interesting than those dealing with the Survey itself and are on conventional and not very illuminating lines. Speaking of sanatorium treatment, Dr. Allan states that "A sanatorium . . . is simply a hospital on 'open-air' lines" It is time that this conception of a sanatorium disappeared, but there is, unhappily, reason to believe that a few sanatorium superintendents, even in this country, still adhere to it There are some interesting but inadequate figures as to infection of cattle in South Africa and the tables and graphs are of value and merit the close study of all those working at tuberculosis.

S. L. Cummins.

PROCEEDINGS OF THE TRANSVAAL MINE MEDICAL OFFICERS' ASSOCIATION. 1925. Mar. Vol. 4. No. 11. pp 3, 4 & 8; June Vol. 5. No 2. pp 1–6; July. Vol 5 No 3. pp. 3–8, Sept.–Oct. Vol. 5. No. 5. pp. 1–8. [**Tuberculosis amongst South African Natives employed in the Mines.**]

i. *Miners' Phthisis Act Consolidation Bill.*—In the March number of the Proceedings is recorded a "Resolution" passed by the Association as bearing upon proposed legislation, a clause having been suggested for inclusion in a Bill before Parliament that "natives" in the mines should be examined *stethoscopically* every three months. The resolution need not be reproduced in full, but it is worth while to quote one of its paragraphs as an example of how the benevolent schemes of laymen appear, sometimes, in the light of the practical experience of doctors:—

"A stethoscopic examination of every native every three months would entail approximately 800,000 examinations a year on the gold mines of the Witwatersrand. A satisfactory stethoscopic examination should take about 10 minutes.

"On this basis, 134,000 hours a year would have to be devoted to these examinations, or, taking 300 working days a year, 448 hours a day, or the full time of 56 medical officers working 8 hours daily at stethoscoping natives only The Executive would here point out that it is beyond the physical powers of any man to stethoscope continuously for more than two hours in any four hours"

ii. *Disposal of Tuberculosis Cases.*—In the March number, too, there is an important letter from Dr. L. BOSTOCK, District Manager of the Witwatersrand Native Labour Association, Ltd, at Lourenço Marques, calling attention to the increasing number of repatriates returning to his territory in an advanced state of tuberculosis of the lungs after work in the mines and asking for earlier diagnosis and increased vigilance on the part of medical officers and others. This letter could not be discussed in the absence of Dr. BOSTOCK, but the importance and the difficulty of the points raised were fully recognized.

iii. *Discussion on Tuberculosis.* [YOUNG].—In the June number, a discussion on tuberculosis is recorded opened by Dr. YOUNG, at the request of the Executive Committee, with an account of the methods adopted in the examination of new recruits before they arrive at the Mines.

For the year 1924, 211,747 natives came to the Mines from all sources. Of these, Dr. YOUNG reports:—

66,755 were British South Africa recruits
68,294 were British South Africa non-recruits
21,191 were British South Africa locals
55,496 were East Coasters (recruited, non-recruited and locals).

Out of this total, only 66,755, or the British South Africa recruits, were strictly examined before reaching the Mines. Summing up, Dr. YOUNG says:—

"It is easy at the initial examination to discover natives with clinically definite tuberculosis, but it is very difficult to detect natives apparently physically fit, with the disease in a latent state, and who are likely to develop tuberculosis after working a few months underground"

In this sentence, Dr. YOUNG puts the matter in a nut-shell Although much of the discussion centred upon the desirability of finding out which of the healthy men examined were the ones destined, later, to develop tuberculosis, it is certain that this is but a pious aspiration. All that the most careful medical examination can do is to detect the men already affected. Very few medical examiners are so successful as to accomplish even this in every case.

iv. *Discussion on Tuberculosis (continued).*—In the July "Proceedings," three important Resolutions were carried, which are worth quoting in full:—

"(*a*) That steps should be taken to control all natives suffering from early tuberculosis who have been rejected at the initial examination as unfit for mine work

"(*b*) That all Contractors' natives working on the mine should be examined before employment, and be under the supervision of the Mine Medical Officer.

. . . . .

"(*c*) That in view of the desirability of ridding the Witwatersrand Gold Mines of pulmonary tuberculosis, amongst European and native employés, and of the necessity of adopting every means by which the engagement of natives suffering from tuberculosis can be controlled, this Association of Mine Medical Officers strongly recommends the establishment of a Central Bureau—adequately staffed and suitably equipped—for the strict clinical examination of all natives (including contractors' and voluntary natives) seeking mine employment.

" Further, that the necessary steps be taken for the satisfactory disposal of those natives rejected by such examination, in order that the risk of their presenting themselves subsequently for examination be guarded against "

v. *Discussion on Tuberculosis* (*continued*).—Two important communications appear in the September-October " Proceedings," the first a discussion on " the initial examination of recruits " opened by Dr. SKAIFE ; the second, a note on " the detection of tuberculosis by weighing " opened by Dr. A. SMITH and Dr. L. E. HERTSLET

(a) *Detection and Prevention of Tuberculosis during work period* [SKAIFE, W. G].—In the opinion of Dr. SKAIFE, the important factors relating to tuberculosis in the initial examination of native recruits are as follows :—

(1) Tribe ; (2) History of previous underground work ; (3) Physique ; (4) General condition ; (5) Condition of lungs.

He considers that, of these, the factor of the " condition of the lungs " is far the most difficult to deal with. As he rightly says, " even with the aid of the X-rays and the stethoscope we must miss some cases."

The interesting point was brought out by Dr. FREW, in the discussion, that East Coast natives developed tuberculosis more rapidly than others, and there seemed to be general agreement on this. FREW added that, in these susceptible natives, " whether they examined them carefully or not, they might still develop tuberculosis." This truism, too often forgotten in the discussion, merely admits the impossibility of diagnosing tuberculosis before it starts. It is hard enough to do so when it has started ! On this point, the objection was put to Dr. FREW that " he had not told them " (the members of the Association) " how to find out, amongst those East Coast boys, which of them were liable to develop tuberculosis." Dr. FREW's reply was : " I meant, I did not think anyone could pick out a boy, at the initial examination, who was likely to develop it." With this rejoinder most people with experience of African recruits will agree.

(b) *Detection of Tuberculosis by Weighing* [SMITH, A. ; HERTSLET, L.E.]—Dr. A. SMITH gave a valuable summary of the methods of periodical weighing carried out, at the State Mines, under arrangements by the Miners' Phthisis Medical Bureau since 1921. The weighing is carried out at the hospital once every 30 days, or when the native receives his pay at the completion of a ticket. The system, as well as the action taken as the result of loss of weight, etc., is so sound that it deserves quotation in full, as it is possible that readers of this *Bulletin* may be in a position to use it in connexion with native labour elsewhere :—

" *Initial Weight.*

" At State mines, after each native has been medically examined and passed as fit, he is issued at the hospital with a weight card, on which all his particulars—such as name, tribe, number, etc., along with his initial weight (stripped)—are filled in, and all cards are filed in a cabinet, which is kept at the hospital and is in charge of an educated native clerk, who has to keep all cards in numerical order.

" The total number of natives, who have been passed for each month for underground work is put in the initial examination form, which is signed by the Medical Officer and kept for counter-signature by a Bureau representative

" *Periodical Weighings*

" The periodical weighings of the natives are done on pay days and no native can receive his pay unless he holds his weight card

" The weighing is done at the compounds On Mondays at the North Compound, and Tuesdays and Wednesdays at the South Compound (the larger of the two compounds) There are over 10,000 native employés on the mine

" The weighing is done, in over 90 per cent of the complement, after a shift and before a meal All natives, except a few staff boys, are weighed naked The weighing is done on a Salter's Albion weighing scale.

" *Lost Weights*

" The following natives are kept aside for medical examination on same days as weighing takes place :—

" i All natives who show a loss of 6 lbs or more in one month

" ii All natives who show a gradual loss of weight over four to six months of 8 lbs or more

" iii Natives who show definite signs of any skin trouble such as syphilis, etc Natives at North Compound are examined there, but South Compound lost weights are sent round to the hospital

" The percentage of natives who come up for examination is not large, and comes to about ·57 per cent

" All lost weights are carefully stethoscoped and medical history, if any, noted , they are also questioned as to whether they had been feeling seedy lately, etc

" *Examination Result*

" i Cases who show definite signs of tuberculosis of lungs are detained in hospital for repatriation, and also natives who are ill

" ii Cases of tuberculous glands of neck are transferred to surface work only, and come up each month

" iii Cases who show a big loss in weight but no physical signs are put up for re-examination next month

" iv. Any cases who show marked crepitations, or whose lungs are not satisfactory, are put on to surface work for a month, and then are re-weighed and re-examined

" v Cases who show a persistent gradual loss of weight over a series of months are kept in hospital for observation, sputum examination and general tonic treatment

" *Record of Lost Weights*

" The lost weights are recorded on the periodical form and this is signed by the Medical Officer and countersigned by the Bureau representative on his periodical visits , also all weights cards of lost weights are dated and stamped and initialed by the Medical Officer

" *Causes of Loss in Weight*

" Causes of loss in weight are difficult to state A certain small percentage is due to tuberculosis Amongst my lost weights on State Mines this came to, in 1924, 2·12 per cent of all lost weights, and this year, up to 30th September, we have had 514 cases of lost weights and 13 cases of tuberculosis, all forms, or 2 52 per cent "

It is clear, from a perusal of the Proceedings of the Transvaal Mines Medical Association, that the importance of tuberculosis amongst native mine labourers is fully realized, and that every effort is being made to devise standard methods of selection and rejection of recruits as well as the disposal of the labourers developing the disease during the period of employment.

S. L. C.

[H. F.] L'infection tuberculeuse chez les Juifs du Sahara. [**Tuberculosis amongst the Saharan Jews.**]—*Arch. Inst. Pasteur d'Algérie.* 1924. Dec Vol. 2. No. 4. pp. 472–473.

DESANGLES (P.). Enquête sur l'infection tuberculeuse chez les Juifs du Mzab par l'épreuve des cuti-réactions.—*Ibid.* pp. 474–477. [1 ref.]

BROUARD (M.) & LEBLANC (L.). L'infection tuberculeuse chez les Israélites de Beni Ounif et de Figuig (Sahara Oranais).—*Ibid.* pp. 478–484. With 1 text fig. [1 ref.]

CÉARD (L.). Enquête sur l'infection tuberculeuse chez les indigènes Musulmans et Israélites de la région de Colomb-Bechar (Sahara Oranais).—*Ibid.* pp. 485–493. [2 refs.]

Desangles gives a brief description of the Jewish population of the Mzab, consisting of about 1,500 persons almost entirely localized in the town in Ghardaia. Amongst these people, tuberculosis is common, of but slight severity and seldom leads to death except in advanced age. The Jewish population, in contrast to the Jews of European communities, lives in a state of deplorably bad hygiene, and the quarter which they occupy compares unfavourably with the rest of the town. Unlike the Mozabites, the Jews remain in their quarter all the year round, never quitting it to journey into the Oasis, and the Jews, too, smoke and drink to excess, the favourite beverages being anisette and " Bouka," an alcoholic liquor distilled from dates. And yet they appear much more resistant to tuberculosis than the Mozabites.

Tuberculin tests, carried out on the Jewish inhabitants of Ghardaia were as follows :—

In 443 children, 215, or 49 per cent., positive.
In 189 adults, 155, or 82 per cent., positive.

This relatively high tuberculin index accords with the chronic and benign type of tuberculosis noted.

Brouard and Leblanc find, amongst the Jews of Beni Ounif and Figuig, a very much lower proportion of positive reactions. Of 174 children, 11, or 6 per cent., were positive, and of 156 adults, 76, or 46 per cent. In these communities, as opposed to the Jewish population of Ghardaia above described, there is, as yet, but little tuberculosis, and but few opportunities for the spread of infection ; nor is there any evidence that the Jews are more resistant to the disease than their Mohammedan neighbours. The authors lay stress on the bad hygiene and the addiction to alcohol manifested by these people and give an interesting account, with a diagram, of the making of " ma haïa," an alcoholic drink distilled from dates.

L Céard gives particulars of the cuti-reactions, not only of a colony of Jews at Colomb-Bechar, but also of the Musulman inhabitants. Amongst the latter, the inhabitants of the Ksar of Colomb-Bechar have an index of 36 per cent., those of the village an index of 49 per cent. The Jews, a community of recent arrival hailing from the Tafilalet, whence they came at the time of the French occupation, and amounting to about 800 persons, have a tuberculin index of 31 per cent. only, constituted of 14 per cent. amongst children and 48 per cent. amongst adults. This relatively low index is explicable in their great tendency to intermarriage within their own race, their recent arrival and relatively short period of contact (about twenty years) with Europeans. On the whole, the findings of the authors of the above investigations into the distribution of tuberculosis amongst the Jews of North Africa lend definite support to the contention of A. CALMETTE that the relatively low incidence of tuberculosis amongst the Jews of Europe is the result of town-dwelling and exposure to frequent small immunizing infections by the tubercle bacillus rather than to a racial resistance. Where the manner of life and the environment are different, the Jew assimilates to other races.

S. L. C.

GUÉGUEN (R.). L'infection tuberculeuse chez les indigènes musulmans du Gourara (Sahara Oranais). [**Tuberculous Infection in Moslems of Gourara.**]—*Arch. Inst. Pasteur d'Algérie.* 1924. Dec. Vol. 2. No. 4. pp. 468–471. [1 ref.]

For the mixed population, Berbers and Arabs, of the Annexe of Timimoun, a preliminary survey of the distribution of tuberculous infection by means of the cuti-reaction shows that of 466 children, from 1 to 15 years of age, a total of 87, or 18·6 per cent., were positive, while of adults, 9 out of 18 tested gave a positive reaction. The author adds that tuberculosis is not particularly prevalent or severe at Gourara.

S. L. C.

BRADFIELD (E. W. C.) **Abdominal Tuberculosis in Indian Practice.**—*Indian Med. Gaz.* 1925. June. Vol. 60. No. 6. pp. 249–252. With 4 text figs. & 1 coloured plate. [1 ref.]

——. **Tuberculous Abdomen.**—*Trans. S. Indian Branch Brit. Med. Assoc.* 1925. Vol. 17. No. 3. pp. 156–161.

While this is mainly a paper for surgeons, Colonel Bradfield brings out some interesting points bearing upon the tuberculosis of natives of Southern India. While bovine infection is unknown in the Madras Presidency, tuberculous lesions of the bones and joints appear to be common and are stated to "pursue a much more intractable course and appear to be less amenable to non-operative forms of treatment" than in Europeans hospitals. "Multiple lesions appear to be more common and the surgical forms more frequently complicated by the presence of lesions in the lungs." Out of all the patients admitted to the Madras General Hospital in 1924, 205, or no less than 21 per cent., were suffering from surgical tuberculosis.

"The sites of the disease were as follows :—

Abdomen	95
Lymphatic glands	39
Bones	35
Joints	28
Abscess (not classified)	3
Skin	2
Testis	1
Kidney	1
Larynx	1
Total	205

The preponderance of abdominal lesions over lesions of bones, joints and glands is remarkable and offers a sharp contrast to the distribution of non-pulmonary tuberculous lesions in Western Europe.

This point is of interest and importance CUMMINS, in his article on tuberculosis in the Official History of the War, Medical Services, Pathology Volume, gives, on page 473, a table of sites of tuberculous lesions in the various races serving in France, where it is seen that abdominal lesions were far more common in Indian troops and in the Indian Native Labour Corps than in any other racial formation CUMMINS was inclined to attribute this to the fact that the Indian troops consumed milk to a much greater extent than others, and were thus more liable to abdominal infection, but this suggestion may have to be revised in view of the apparently marked liability of Indians to an abdominal type even where bovine infection can be excluded

S L C.

GANGULI (P) **A Few Hints on the Diagnosis, Prognosis and Treatment of Pulmonary Tuberculosis.**—*Indian Med Rec* 1925 July & Aug Vol 45 Nos 7 & 8 pp 233–237, 254–257

This paper hardly concerns the tuberculosis of the tropics It is just a summary of diagnostic methods, with special reference to tuberculin tests and a few remarks as to prognosis and differential diagnosis It is under the last heading that what there is of "tropical' interest comes into the picture The medical officer new to Africa or to the East should never forget that the wasting sweating and pyrexia pointing so surely to tuberculosis in European countries is, here, more likely to be the result of chronic malaria or kala azar

Captain Ganguli's list of contra-indications to the subcutaneous tuberculin test should be laid to heart, more especially in relation to the progressive and exudative types of tuberculosis met with in the natives of tropical countries

The opening paragraphs of Part I are of a more definite bearing on Indian tuberculosis than the general treatment of the subject in the rest of the paper Ganguli says that "in Bengal the conditions are such that this disease is on the increase and eating up the vitality of the nation" As a set-off to the views of Dr Girindra Nath MUKHERJI quoted below (p 316), we learn from Dr Ganguli that it is not the weak and ill-nourished that are the chief victims of tuberculosis "It is a disease," he says, "which principally affects the prime of our manhood"

S L. C

SENGUPTA (Nalini Ranjan) **The Problem of Tuberculosis.**—*Indian Med Rec* 1925 July. Vol 45 No 7 pp 197–200

"What" asks Dr Sengupta, "is tuberculosis?" To this question he provides the following answer:—

"Tuberculosis is a disease due to faulty endocrine functionation characterised amongst others by fever anaemia loss of weight and excessive loss of calcium from the system The advent of the tubercle bacilli into the system and of other bacteria early or late in the course of the process, and their location determines the nature and subsequent course of the disease"

Later he states that —

"Tuberculosis is pre eminently one of these conditions where a doctor has to find out what starts the series of disturbances of which the invasion of the lung or intestine with T B. is only an important consequence "

It is a good thing that Indian doctors should tackle the problem of tuberculosis for themselves and original thinking deserves encouragment—but it is just as well to guide the course of original thought by practical experiment Speculations such as the above are calculated to lead to the kind of progress which usually ensues when the cart is placed before the horse.

S L C

MUKHERJI (Girindra Nath) **Tuberculosis in Bengal.**—*Indian Med Rec* 1925 Sept Vol 45 No 9 pp 273–276

Dr Mukherji takes the view that " mere exposure to infection is not by itself dangerous if the general health of the individual is good and its [*sic*] resisting power normal " To those who have seen young African and Indian soldiers, men in the splendour of physical health, and living under the excellent hygienic conditions of army life, pass, in a few months, from their full vigour to the last tragic feebleness of acute phthisis, and who have been able to contrast this fatal susceptibility with the high specific resistance shown by the C3 population of the great industrial centres in England and Wales, Dr Mukherji s doctrine will seem a highly dangerous one, at least for India, where so many susceptible persons are concerned

While many of the opinions of the author about tuberculosis require revision in the light of modern knowledge his account of the mode of life in his own country and the many risks involved, for his people, in the transition from a primitive culture to an industrial life on " Western " lines is both true and disquieting

It would be interesting, however, to know his authority for the statement " Animals [cows] killed for the market are often tubercular ' If this is now true for India, the facts ought to be set forth in detail

S L C.

ROY (Ashutosh) **Some Etiological Factors of Tuberculosis in India in General and Bengal in Particular.**—*Indian Med Rec* 1925 July Vol 45 No 7 pp 229–233

This paper, while consisting largely of quotations from Professor Ray LANKESTER, the Editor of the *Indian Medical Gazette*, and Doctor MUTHU, has an interesting and tragic character, so intense is the feeling of anxiety disclosed in it, as to the urgency of the tuberculosis problem in India and the bearing upon it of the special habits and customs of Indian races under the stress of new ideas, requirements and occupations imported from outside Of especial importance are the " joint family system " of the Hindus, " early marriage, sexual excess, too many pregnancies, crowding together, and prolonged lactation "

The sexual life of the student community comes in for castigation and is thought, by the author, to play an important part in the spread of the disease amongst adolescents Truly the price paid for a callow imitation of Western civilization is out of proportion to the value of the purchase. This paper makes sad reading

S L C

CHATTERJEE (Rai Bahadur Gopal Chandra). **Longevity of People who have been at One Time of their Lives declared Tuberculosis Cases.**—*Indian Med. Rec.* 1925. July. Vol. 45. No. 7. pp. 202–204.

This paper is of considerable interest because it shows that in India, as in European countries, there are resistant cases, capable of prolonged life in defiance of infection by the tubercle bacillus. Dr. Chatterjee quotes 8 cases from his own experience of patients continuing in good health for years after an attack of tuberculous disease. While noting these cases and laying stress on what he calls the "bright side of the picture," Dr. Chatterjee is under no illusions as to the specificity of the tubercle bacillus and its danger for susceptible persons. Talking of the would-be tuberculosis specialists who regard invasion by Koch's bacillus as no more than a "serious consequence" of a pre-existing state of faulty nutrition, he admits the futility of arguing with them "They do not," he says, "seem to take into cognizance the fact of families in best of circumstances living on purest air possible being decimated by tuberculosis." These words of wisdom are worthy of consideration by many tuberculosis specialists outside of India.

S. L. C.

KORNS (John H.). **Incidence of Tuberculous Infection in China.** —*China Med. Jl.* 1925. Jan. Vol. 39. No. 1. pp. 10–19. With 2 folding tables.

This paper constitutes a real contribution to our knowledge about tuberculosis in China, a field of information as yet almost unexplored and promising a rich harvest to the investigator. The most important communication known to us on this subject is that of SCOTT (see this *Bulletin*, Vol. 18, pp 376–379) in which an analysis is given of 300 consecutive post-mortems on children dying of tuberculosis in Hong Kong. But, while of intense interest to the student, SCOTT's report has only a relatively slight bearing on what SERGENT calls "prémunition" as a factor in the tuberculosis of China, since it deals with the post-mortem findings in an age-group too young to be anything but extremely susceptible, whether in China or in Europe.

In the Official History of the War (Medical Series, Pathology, p. 480) a table setting forth the annual incidence and mortality from tuberculosis per 10,000 of strength in some racial types of the British Expeditionary Force in France and Flanders shows that the Chinese Labour Corps approximated to the Portuguese troops rather than to East Indians or Africans in respect of liability to tuberculosis, a result which might, perhaps, have been expected in units raised in a country where the disease is known to have existed for centuries. In contrast to the statistical record, however, the reviewer's recollection of such cases of Chinese tuberculosis as came to his notice in France is that they were of great severity and of a "primitive" type and he recalls a series of post-mortem specimens from phthisical cases shown him by a young medical officer at one of the Chinese general hospitals close to Abbeville which conformed rather to the caseo-necrotic type characteristic of Africans and Orientals than to the fibrotic tuberculosis of Western races.

It was therefore with great interest that he turned to Dr. Korn's paper, hoping to find in his account of the incidence of tuberculous infection in China some fresh light upon the behaviour of Chinese units when brought into contact with infection in Europe. The information supplied is of a kind which would be welcome from all Colonies and Dependencies of the British Empire, but which, alas, is seldom forthcoming. Dr. Korns tabulates the results of von Pirquet tests carried out on a series of 2,049 apparently healthy Chinese children, 1,070 boys and 979 girls, ranging from 8 to 20 years, and coming from 12 different institutions in or near Peking or Paotingfu. Table I deals in Section A with students in charitable Institutions coming chiefly from poor families in the famine areas, while children from the middle classes in mission and Government schools are dealt with in Section B. A rough division, on what the author notes as being a rather unsatisfactory basis, is made between children of urban and rural origin; and separate figures are given for the sexes.

The figures show that there is no appreciable difference between rural and urban children, that the male children tend to be more frequently infected than the female children, and that, on the whole, the distribution of infection in childhood is much less than in European countries. The most remarkable points, however, are that the incidence of infection is decidedly higher amongst the middle class children than amongst those from the poorer classes; 37 per cent. in Section B as compared with 26 per cent. in Section A, although the groups are of comparable ages; and that, especially in Section A, there is little tendency to the usual "step-like" increase of positive reactions with increasing age.

The following rough table, extracted from Table I in the text, will serve to illustrate these latter points:—

Von Pirquet Positives per cent. by Age-groups in Chinese Children.

Ages	8	9	10	11	12	13	14	15	16	17	18	19	20
A. Children of poorer classes	0	24	26	26	33	30	30	25	22	19	22	24	33
B. Children of middle classes	13	33	32	24	33	41	40	36	38	38	40	36	34

These results are difficult to interpret, especially without the local knowledge that might supply a clue. It may be said that they tend, as far as they go, to suggest that there is but little diffusion of infection amongst children in China, a conclusion which would harmonize rather with our recollection of the pathological findings in phthisical adults of Chinese units in France than with the statistics of morbidity and mortality in the Chinese units as given in the History of the War. But it is not possible to accept as typical of China in general the results of tuberculin tests applied only to children under the artificial conditions of institutional life; conditions which may, perhaps, result in "sheltering" from home infection or, on the other hand, lead to propagation of infection from child to child where an "open" but undiagnosed case happens to be present. It is not suggested that the latter accident has occurred; the figures, indeed, appear to negative such an idea; but the possibility must be taken into account in considering the significance of the results.

It is to be hoped that results from Chinese children and adults under home conditions may, some time, be forthcoming to amplify the very interesting records of Dr. Korns.

It is stated that the results of von Pirquet tests were read after 48 hours. In the reviewer's experience, to obtain a true reading, it

is advisable to note the reactions for at least four successive days after the tests, the maximum effect being visible, as a rule, on the third day, after which the results gradually fade away. This point is mentioned as it is just possible that a few "positives" may have been missed if the 48 hours reading was the only one recorded.

S. L. C.

Callender (G. R.), Shepard (C. A.) & Kirkwood (R. C.). **Tuberculosis in Filipino Troops.**—*Milit. Surgeon.* 1925. May. Vol. 56. No. 5. pp. 579–605. With 3 charts in text. [5 refs.]

This paper sets forth the results of an investigation of the amount of pulmonary tuberculosis amongst Filipino troops serving with their units in comparison with the amount found by the application of the same criteria by the same observers to 1,000 white American soldiers. There is also an investigation by another worker into the Filipino troops at Camp Stotsenburg, but here there were not equal radiographic facilities, nor was it possible to make a comparison with American troops.

"Positives" per cent in American and Filipino Troops by Ages.

	19–	20–24	25–29	30–34	35–39	40+	Per cent. total positive.
American Troops (White)	10·0	8·9	6·8	1·8	6·2	5·5	7·3
Filipino Troops (Manila) ..	10·3	16·4	15·4	20·0	23·9	25·1	17·7
Filipino (Camp Stotsenburg)	11·5	11·3	12·5	15·6	19·8	28·4	15·4

The results, so far as concern *the positives per cent.*, are abstracted in the above table for convenience of reference, but those requiring an accurate idea of the findings must consult the original. It will suffice here to note that whereas, in white American soldiers, the "positives" decrease with advancing age, the reverse is true of the Filipinos. The authors explain this difference as in part due to the fact that American units are more efficiently "weeded out," tuberculous individuals being early detected and discharged. It would seem, however, that the Filipinos, as a nation, have a very high incidence of tuberculosis, a long history of tuberculization, and the defects of hygiene which facilitate rapid distribution of infection. The result is said to be a very high infantile and childhood mortality, the survival of only those with a considerable measure of resistance and a tendency to a recrudescence of the disease in late middle age, due perhaps to the lowering effects of intercurrent tropical diseases and defects in personal hygiene. It would seem, then, that the peculiar characters of the age-distribution of tuberculosis in Filipino troops is to some extent the expression of conditions obtaining in civil life. The majority of the cases recorded as "positive" were noted as "inactive," and it is suggested that the Filipino soldier, under the advantages of good food and the amenities of military life, is able to resist tuberculous infection to a very marked extent and to show but little tendency to toxic phenomena. Post-mortem examinations on civilians bear out this suggestion of a high resistance, a marked tendency to fibrosis being observable in most adult cases.

This paper is of much interest and deserves close reading. It contains an attempt to apply mathematical criteria to enhance the value of the comparisons between the different groups examined; but, in the opinion of the reviewer, the real difficulty lies in the *clinical* findings, which must necessarily be subjected to large degrees of error. "Only those cases were called positive in which positive physical signs were found which were confirmed by the presence of characteristic shadows in the parenchyma of the lungs by stereoscopic roentgenogram." Those familiar with tuberculosis will realize how great may be the variations between the findings of different observers, or of the same observer at different times, when physical signs and radiograms alone are relied on. The authors agree to this for, discussing statistical variations, they say "It would appear that the undeterminable variation of examiner and technique, including accessory aids, such as X-ray, are responsible, and we let it rest with that statement." The work, however, has clearly been both thorough and competent, within the limits of the methods employed, and it would be a good thing if medical officers serving with native troops in some of the British Colonies and Dependencies would institute enquiries on somewhat similar lines. The absence of any reference to the numbers of cases found to be sputum-positive is to be regretted; and the omission to carry out tuberculin tests to illustrate the distribution of *infection* as compared with clinically manifest *disease* leaves another question unanswered. But those familiar with the difficulties of carrying through elaborate clinical investigations in the tropics will easily forgive these omissions and will accord every credit to the authors of a successful and interesting bit of work.

The more important conclusions are as follows:—

"Thirty per cent of male Filipinos of military age show tuberculous disease in a degree which should cause their rejection as recruits

"Filipino soldiers appear to be able to continue on duty even when a tuberculous process is active, provided the extent be not too great, and such processes heal while continuing on active duty

"Approximately two and one-half times as many Filipino males of the ages 19 to 50 have relatively gross tuberculous lesions in the lungs as are found in American males of the same age group"

S. L. C.

BHADURI (Baidyanath). **A Few Words about Ocular Tuberculosis in General and Phlyctenular Kerato-Conjunctivitis.**—*Indian Med. Rec.* 1925. July. Vol. 45. No. 7. pp. 215–217.

Bhaduri mentions the "appalling" death rate from tuberculosis in Bengal as a recent observation. He finds that, leaving out phlyctenular disease, ocular tuberculosis only amounts to about 1 per 1,000 of cases in his own experience. He takes the view that "primary infection of conjunctiva and cornea is very rare" and thinks that, so long as the epithelium is intact, tubercle bacilli cannot penetrate into the conjunctiva.

Experiments by the reviewer on the conjunctival infection of guineapigs disproves this contention (*vide Tubercle*, 1924, January) but, while tubercle bacilli can easily pass through the conjunctiva of healthy but susceptible animals, the practical bearing of this observation on man is still open to question, and it is of interest to note this opinion from a practical ophthalmologist. The work of WEEKERS and COLMANT is quoted, and the author clearly favours the view that phlyctenular conjunctivitis is, for the most part, a manifestation of tuberculosis.

S. L. C.

GUPTA (A.). **A Brief Survey of the Tuberculosis of the Skin and the Tuberculides.**—*Indian Med. Rec.* 1925. July. Vol. 45. No. 7. pp. 204–215. [8 refs.]

This anything but brief survey is a decidedly useful one for the practising physician, and is just the sort of paper for a "Special Tuberculosis Number." There is little or nothing, however, in Dr. Gupta's article relating to the special features of tuberculosis as a disease of the tropics, and we merely call attention to it because it ought to be of real value to medical men requiring information about tuberculosis of the skin. The author makes one curious statement which requires, we think, to be revised. Speaking of tuberculosis of the eyelids he says: "The T.B. are carried to the eyelid from the naso-pharynx, *via* the nasal duct and the lachrymal sac." This attribution to the tubercle bacillus of a power to swim up against the current along a narrow duct with living walls is not very convincing. Why postulate these acrobatic powers for a non-motile organism when the blood-stream is there to carry it from place to place?

S. L. C.

LAMPE (P. H. J.). Een eigenaardig geval van tuberculose. [**A Peculiar Case of Tuberculosis.**]—*Geneesk. Tijdschr. v. Nederl. Indië.* 1925. Vol. 65. No. 2. pp. 244–247. With 1 plate.

In Surinam tuberculosis usually bears the character of an acute infectious disease. This case report concerns a native woman in whom post-mortem the right lung was found not to be affected, but atelectatic and imbedded in thick masses of tuberculous granulation tissue, "like the kernel in a pulpy fruit."

W. J. Bais.

POMARET. Etat actuel du traitement des tuberculoses par les chimiothérapies anti-lépreuses. [**Present State of Treatment of Tuberculosis by Chemotherapeutic Agents Effective in Leprosy.**]—*Progrès Méd.* 1925. Apr. 18. No. 16. pp. 567–570. [38 refs.]

As its title implies, this article is merely a résumé of recent work in the application to tuberculosis of the various derivatives of the gynocardates and morrhuates so successfully employed in leprosy. After a consideration of the numerous similarities between tuberculosis and leprosy, the author gives an excellent summary of the present position of the new anti-leprosy treatment as applied to tuberculosis and closes his paper with a valuable bibliography of the subject. The author himself has given a comprehensive trial to the following :—

(*a*) Gynocardates and morrhuates of soda in 10 per cent. solution.
(*b*) Ethyl-chaulmoogric ethers, both crude and distilled.
(*c*) Mixtures of ethyl-chaulmoogric and benzyl-chaulmoogric ethers.
(*d*) The total ethyl-morrhuic ethers.

(*e*) A preparation obtained by the simultaneous etherification of a mixture of equal part of chaulmoogric and morrhuic acids and the solution of the ethylic ethers thus obtained in cod-liver oil containing 2 per cent of cholesterin

It is the last which he finds the most active in the treatment of tuberculosis and he promises a clinical account of the cases treated at a future date

S L C.

Row (R) **The Curative Value of Autolysed Tubercle Bacillary Culture Vaccine in Pulmonary Tuberculosis and Leprosy.**—*Indian Med Rec* 1925 July Vol 45 No 7 pp 191–196 With 1 text fig & 16 charts [7 refs]

In a study of tubercle cultures grown on glycerinated brain-agar, and emulsified in saline, Row has satisfied himself that the emulsions contain a fat-splitting ferment and a feeble proteolytic enzyme The result of the action of these ferments is the production of " a putty like mass of agglutinated tubercle bacilli most of which are found to be non-acid fast " The mass is further purified and defatted and finally yields " a body with a minimum of fatty and waxy constituents, but mostly made up of bacillary proteins " This is dried, weighed, powdered and " made up into a colloidal suspension of a definite strength in saline ' Row gives from 0 01 to 0 02 mgm per week subcutaneously in treatment As with other tubercle-bacillary emulsions, these doses are found by Row to cause " a small oedematous thickening " which subsides in a few days Doses over 0 025 mgm may produce local swelling and pain of over two weeks' duration We are able to endorse these findings from our own observations with a sample of his vaccine kindly supplied by Colonel Row , and we have also met with the rise of temperature of from 0 5° to 1 5° F following inoculation Details are given of 25 patients treated and the charts indicate a very striking fall in temperature following treatment So far, with the cases treated in Wales, we have failed to obtain comparable results, and we have been obliged to reduce the dosage to 0 001 mgm in most cases owing to reactions of rather too great severity , but it is not possible to argue from the allergic cases of Europe to the types of acute tuberculosis treated by Row in India and the results of his more extended trials will be awaited with interest

[Experiments carried out by Dr SCHUTZE in collaboration with the author at the Lister Institute, London, failed to demonstrate any favourable action upon the tuberculosis of artificially infected guineapigs]

S L C.

RELE (V G) & GHARPURE (P V) **Some Observations on the Results obtained in the Treatment of Surgical Tuberculous Lesions by Various Agents.**—*Indian Med Rec* 1925 July Vol 45 No 7 pp 200–202

The authors have tried aspiration and oxygen injection (12 cases), Row's " Autolysed Tubercle Vaccine " (8 cases), Morrhuate of sodium, Tuberculin ointment and Iodoform emulsion (number of patients not stated) The results recorded are favourable on the whole, but, in some cases, the authors appear not quite satisfied Speaking of the effect of tuberculin ointment in cases of tuberculosis of bone, presumably complicated by sinus formation, they say that ' in all cases the immediate effect was that the discharge became more and the edges were cast off, and the colour of the skin around the ulcer improved. The effect on the patient's mind is the reverse as he sees the wound enlarge and the discharge increasing." This effect on the minds of the patients led to the treatment being discontinued before final conclusions could be formed of its utility.

S. L. C.

BABLET (J.). Premiers essais de vaccination antituberculeuse des nourrissons en Cochinchine et au Cambodge. [**First Attempts to Vaccinate Infants against Tuberculosis in Cochin China and Cambodia.**]—*Bull. Soc. Path. Exot.* 1925. May 13. Vol. 18. No. 5. pp. 379–380.

Between December 1924 and March 1925 the author, with the help of a large number of his colleagues in Cochin China, has carried out 435 vaccinations of infants with the B.C.G. vaccine of CALMETTE; and steps have been taken to extend the movement and to increase the number of "vaccinated" children throughout the colony. All the children selected were under 10 days old and each received, on three occasions, at two-day intervals, a centigram of B.C.G. culture, given by the mouth. In view of the results of the experiments with chimpanzees and monkeys at Kindia, summarized below, there is good reason to hope that the future may demonstrate the success of this admirable experiment in the prevention of tuberculosis.

S. L. C.

WILBERT (J.). Expériences de vaccination des singes contre la tuberculose par le BCG. [**Vaccination Experiments against Tuberculosis in Monkeys by B.C.G.**]—*Ann. Inst. Pasteur.* 1925. Aug. Vol. 39. No 8. pp. 641–651.

The experiments here recorded were carried out at the "Centre de recherches et d'élevage de singes" formed at Kindia (French Guinea) by the Pasteur Institute and M. Wilbert states that they were organized on a programme drawn up by CALMETTE. The intention was to ascertain whether a preliminary infection (*prémunition*) with the B.C.G. strain of tubercle bacilli, rendered avirulent by CALMETTE and GUÉRIN through prolonged culture on a bile medium, would serve as a protection against subsequent infection with virulent tubercle bacilli. In a few preliminary experiments on chimpanzees it was shown that it was possible to pre-immunize these animals against relatively enormous doses of virulent bacilli by means of B.C.G. But, as pointed out by M. Wilbert, these protections against massive infections were a kind of "acrobatic performance," and it remained to apply the preventive immunizations on a more extended scale. Two series of experiments were instituted, the first on 15 chimpanzees, and the second on 59 Pithecan monkeys.

Chimpanzees. Three animals of adult age were vaccinated, one by subcutaneous inoculation of 5 cgm. of B.C.G. and, later, by the swallowing of 25 cgm. of the same culture; the other two by the swallowing of 25 cgm. of cultures in 5 doses of 5 cgm. each over a 10-day period. All these animals were then placed in close contact (cohabitation) with chimpanzees infected with virulent strains and, in the case of two of them, were further inoculated subcutaneously or "fed" with large doses of the virulent strains. At the same time, 5 animals were infected with the virulent strains, H.R. and B.V., while 7 "controls" were placed in contact with the "infected" animals, but were left unvaccinated and uninfected. A year later, all three "vaccinated" chimpanzees were alive and well, all the 5 "infected" animals had died months earlier from tuberculosis, while, of the unvaccinated and uninfected "controls," 4 had died tuberculous through contact-infection and 3 had died of Pasteurella disease too early to show signs of tuberculosis.

In the case of the Pithecan monkeys, the experiment was on similar lines, 19 animals being "vaccinated" with B.C.G., and later, infected with large doses of virulent bacilli, 20 given virulent infection, and 20 "controls" kept without either vaccination or infection, but left in contact with the virulently infected animals, as were also the vaccinated group. Here the results were equally striking. Of the vaccinated monkeys, 6 were alive and well a year later, while 11 had died of various parasitic maladies, *but without showing any trace of tuberculosis at post-mortem examination.* Of the 20 "infected" monkeys, 19 had died of tuberculosis and the 20th had died of intestinal obstruction 8 days after the infecting inoculation.

Nineteen of the "controls" had died of tuberculosis contracted through contact and the 20th had succumbed to Pasteurella disease 16 days after being taken into use. In other words, none of the vaccinated animals had died of tuberculosis, while all the others, except 2 removed by premature death, had succumbed to the disease.

The author concludes :—

(1) That inoculation by, and swallowing of, living B.C.G. culture up to 100 mgm. is absolutely harmless to chimpanzees and Pithecan monkeys.

(2) These animals can easily be "pre-immunized" to virulent tuberculosis by B.C.G. vaccine under the conditions of the experiment.

(3) The "pre-immunization" thus accomplished lasts over a year.

(4) And the immunity may be renewed by the ingestion of a further dose of B.C.G. repeated annually.

The experiments, as recorded, hardly justify the third conclusion, since it may have happened that the exposure to "contact infection" led to a further production of immunity in these "protected" animals; but it cannot be denied that M. Wilbert's investigations hold out a splendid promise of success for the B.C.G. vaccine of CALMETTE and fully justify the efforts now being made in France and in her colonies to protect the infants of tuberculous parents by the same means.

S. L. C.

CURASSON (G.). La tuberculose bovine à l'abattoir de Bamako. [**Bovine Tuberculosis at the Bamako Abattoir.**]—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 687–689.

Like previous communications on animal tuberculosis from the pen of M. Curasson, this little paper is, although brief, both interesting and valuable. The author, with his colleagues, Messieurs DISCHAMPS and MIR, has happened upon no less than seven instances of tuberculosis in zebus slaughtered at the abattoir at Bamako during the months of March, April and June 1925. In 6 of the cases, the tracheobronchial glands were affected, the liver also containing lesions in one of them;

while the 7th case was one of miliary tuberculosis. The nature of the lesions was proved by microscopic examination of the pus and the finding of acid-fast bacilli or, where bacilli could not be found, the inoculation of the caseous pus into a guineapig which died from tuberculosis within 6 weeks and from which the disease was transmitted to other animals and successfully cultivated.

Rabbits have been inoculated, but it is still too soon to decide whether the infections are due to the "human" or the "bovine" type of tubercle bacillus; but the morphology and cultural characters suggest that the strain examined is of the *typus bovinus.* These 7 cases were found in a total of 1,107 animals slaughtered and examined in the months in question. Curasson thinks it possible that, having in view the known rarity of tuberculosis from African cattle, he may have overlooked lesions in previous investigations or attributed them too readily to the various parasitic conditions which are so apt to simulate tuberculosis in African cattle. The zebus found infected had come from the regions to the south of the Sahel. Curasson has now started intradermic tuberculin tests, but, out of 56 animals so far examined, has found only one "positive" reactor.

S. L. C.

HEINEMANN (H.). Zur Diagnostik der Tuberkulose im tropischen Lande. I. Mitteilung. [**Diagnosis of Tuberculosis in the Tropics.**]—*Ztschr. f. Tuberkulose.* 1924. Vol. 40. No. 5. pp. 324–329. [2 refs.]

——. II. Mitteilung.—*Ibid.* 1925. Vol. 41. No. 5. pp. 321–325.

Heinemann emphasizes the difficulties which sometimes arise in the early diagnosis of tuberculosis in primitive peoples. Disease of the glands may be confused with yaws, there are many conditions almost indistinguishable from bony tuberculosis even by X-ray examination, while the irritative cough, pleural pain and irregular pyrexia of early phthisis are also common in the hepatitis of amoebic disease and in chronic malaria.

Valuable as is the cutaneous tuberculin test, it is not without its pitfalls even in tropical countries, while there is real danger in employing the intracutaneous and subcutaneous tuberculin tests in the susceptible individuals of "primitive tribes." In the hope of arriving at a diagnostic method free from risk, Heinemann has tried a "complement-deviation" test in which "Old Tuberculin" (Höchst) is used as the "antigen," but he points out that not all samples of old tuberculin will serve and advises the use of a sample which is active in a "dose" of 0·02 or 0·025. [It is not stated what form of activity is used as a criterion, but it is assumed that the power of binding complement in the presence of an active serum is implied.] This test, called by the author the "T.W. test," has been tried by him with the sera of 2,000 persons, most of whom had also been tested by means of the cutaneous tuberculin test. In 59 patients suffering from manifest tuberculosis, the results, as compared with the von Pirquet readings, were as follows:—

von Pirquet positive	...	38 or 64 per cent.,
"T.W." positive	...	24 or 41 per cent.

Out of these, 12, or 20 per cent., were positive to both tests, 9, or 15 per cent., negative to both, 26, or 44 per cent., were positive to the von Pirquet and negative to the "T.W." test, while 12, or 20 per cent., were positive to the "T.W." and negative to the von Pirquet reaction.

It is of interest to note that, out of 24 cases of cirrhotic phthisis, the von Pirquet test was positive in 22 and the "T.W." in 6 only, while, on the other hand, the von Pirquet only gave 8 positives, as compared with 14 positives by the "T.W." method, in the exudative and mixed cases of pulmonary tuberculosis. That there are fallacies in the "T.W." test is evident from the fact that out of 712 cases suffering from various diseases other than tuberculosis, no less than 213, or 30 per cent., gave a positive "T.W." reaction. It was especially in malarial cases that this fallacy was noted, a positive "T.W." occurring iu 162, or 55 per cent., of 291 malarial patients examined.

In his second paper, the author compares the results of the "T.W. test" and a complement-fixation test with Besredka's antigen. His findings were as follows :—

Type of case.	T.W.+	Besredka+
Active tuberculosis	41 per cent.	91 per cent.
No signs of tuberculosis. Pirquet+...	54 „ „	40 „ „
No signs of tuberculosis. Pirquet—...	30 „ „	15 „ „

From these findings it is evident that the "Besredka test" is calculated to be of considerable value in the detection of active tuberculosis in the tropics.

S. L. C.

LOUSTE (A.), LOUET (L.) & DARQUIER (J.). Tuberculose à forme hypertrophique de la joue simulant le bouton d'Orient. [**Hypertrophic Tuberculosis of the Cheek simulating Dermal Leishmaniasis.**] —*Bull. Soc. Française de Dermat et de Syph.* 1924. Dec. No. 9. pp. 504–505.

The authors describe a case in which a swelling situated on the left cheek close to the nasal furrow in an Armenian aged 15 was regarded as, probably, a case of oriental sore until a histological examination revealed the true nature of the lesion, which proved to be cutaneous tuberculosis.

In the discussion which followed, JEANSELME pointed out that if it were possible to mistake a cutaneous tuberculide for leishmaniasis, an error of the inverse kind was still more frequent, and cited cases in which oriental sores had been regarded as tuberculous lesions until the diagnosis was settled by their spontaneous healing on return to Europe.

[It is curious that, although the authors make special mention of palpable lymphatics and an enlarged gland in the "drainage area" of the sore, there is no mention, during the discussion, of the rarity of adenitis in cutaneous leishmaniasis and its almost invariable occurrence in tuberculosis of the skin. This point alone should have sufficed to awaken suspicion as to the true nature of the case]

S. L. C.

FERREIRA (Clemente). Liga Paulista contra a Tuberculose. Exercicio de 1924. Relatorio apresentado a Assemblea geral na sessao annual ordinaria de 26 de Maio de 1925. [**S. Paulo League against Tuberculosis. Report of 1924.**]—64 pp. 1925. S. Paulo : Casa Alpla Ltd. Praça de Sé, 92–A.

While without special bearing upon the problems of tropical tuberculosis as generally understood, this Report, like others from the hand of Dr. Clemente Ferreira, is full of interest for the student of preventive medicine and should be consulted in the original. It is to be noted that the author is, on the whole, disappointed with the results of treatment with sodium morrhuate; not having, as yet, obtained the high proportion of successes recorded by BOELKE and others. He is now trying copper morrhuate and is, so far, inclined to hope for better results with this preparation.

Discussing the tuberculosis mortality of Sao Paulo in 1924, a total of 824, or 12·3 per 10,000 inhabitants, he points out that, according to Sir Robert PHILIP, who postulates 5 "open cases" for every death, or to EMERSON, who considers that each death corresponds to 7 open cases, there ought to be from 5,000 to 7,000 beds available for tuberculosis in the locality. In contrast to this, there is merely the dispensary, capable of dealing with 300 or 400 infected families, the sanatorium of St. José dos Campos with 60 beds, and a few more beds in the pavilion of Santa Casa. After giving a review of what is being done elsewhere, he formulates what he regards as the minimum provision for a tuberculosis service on efficient lines, including dispensaries, open air schools, sanitaria, hospitals and laboratories.

S. L. C.

REVIEWS AND NOTICES

YORKE (Warrington) [M D Prof of Parasit, Univ of Liverpool & Liverpool School of Trop Med & MAPLESTONE (P A) [M D, D S O] With a Foreword by STILES (C W) [Prof of Zool, U S Pub Health Service] **The Nematode Parasites of Vertebrates.**—pp x+536 With 307 text figs 1926 London J & A Churchill, 7, Great Marlborough Street [Price 36s net]

The book proper opens with an introduction which accepting the zoological status of the Nemathelminths as a Phylum and that of the Nematodes as a Class deals under RAILLIET'S eight superfamilies with the Eunematoda parasitic in vertebrates The difficulties in our present state of knowledge, of their discrimination are indicated and the extent to which their whole super specific classification inevitably remains a matter of personal opinion and therefore of personal responsibility is throughout made evident

Of the superfamilies the heterogenetic Rhabdiasoidea are alone defined on other than anatomical grounds The reasons which have influenced the writers in making the divisions and subdivisions which they have adopted are clearly stated thus enabling any reader with adequate knowledge to form his own opinion as to the stability of the conclusions reached It is a method which invites the criticism which it will doubtless receive but it is scientifically honest and does not hide behind the curtain of authority

Since the species listed number about 2 000 and even the genera are about as numerous as the days of the year the need for limiting descriptions to the latter is clear, if the subject is to be kept within the limits of one volume The main body of the book is occupied with their consideration aided by valuable keys and accompanied by lists of the species which the writers assign to each genus

A few explanatory notes follow dealing with terms used and here and only here will be found an indication that the typical strongyle bursa is in general possession of a definite number of rays An index of generic names is next introduced the kind of print used indicating their validity or otherwise cross references by double entry leaving the reader in no doubt There next comes an index of specific names giving the author date type host genus assigned and original if these are not identical and the page in the earlier part of the volume on which they appear The book ends with a list of 684 numbered references the corresponding pertinent numbers being found at the end of each generic section

It probably requires one with some knowledge of the character of the literature on the Nematodes to appreciate how immense has been the work involved and how altogether unexpected it would be if there were no oversights Such exist They are not here noted partly because such a list to be of real value should be complete and the examination hitherto made of the volume has no pretence to be so partly because their emphasis must give an entirely wrong perspective of the manner in which the writers have accomplished the task which they have undertaken

And this leads naturally to STILES'S foreword He and HASSALL are at present occupied in adding to their invaluable Index Catalogues one arranged under Hosts STILES has read the proof sheets of the volume under review and has afforded much friendly criticism and many valuable suggestions Study of the foreword shows that STILES too has benefited, that there has been mutual ungrudging service and aid, not always too evident in these matters to the great advantage of helminthology

STILES, "as a member of the passing generation," and may his generation be long in passing, emphasizes the present desire to use, for the practical benefit of mankind, knowledge already gained the consideration that none can give knowledge without first gaining it, and the increased efficiency which outlying workers, labouring under a radially increasing handicap in the matter of reference material will gain from the appearance of the volume He ends by a letter to 'My dear unborn colleague," which concludes with these significant words "This work by Yorke and Maplestone was written in order to save your time and to make you more efficient in your professional life It has cost them many hours and days of patient labour It has not been prepared in order to gain a reputation It is a labour of love on their part in order to help you See that you do for the generation which follows you what Yorke and Maplestone have done for you '

Clayton Lane

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SHARP (C G Kay) [M D Chief Med Officer Education Dept Province of Natal Major R A M C (T A)] With a Foreword by CHRISTOPHERSON (J B) [C M G M D F R C P F R C S] **Schistosomiasis vel Bilharziasis.**—74 pp With 1 map & 35 text figs 1925 London John Bale Sons & Danielsson Ltd 83–91 Great Titchfield Street Oxford Street, W 1 [Price 7s 6d net]

This little volume will be of considerable interest not only to many medical practitioners in regions where Bilharziasis is endemic but also to those educationalists who are concerned with the physical welfare of their pupils The author s experience has been gained chiefly in the Education Department of Natal but while serving during the War he had opportunities of visiting Mesopotamia and India and the results of further observations are recorded in the work The brief foreword by Dr J B Christopherson emphasizes the value of mass treatment in schools and the unique opportunities which they afford for educational propaganda The text is clearly and agreeably written and printed It should be remarked that the title *Schistosomiasis vel Bilharziasis* is somewhat misleading indicating a broader survey of the subjects than that actually carried out Schistosomiasis of the Far East is practically ignored although the Bibliography at the end of the volume refers to the more important original papers on the disease The most disappointing feature of the book however are the illustrations It is difficult to believe that anyone with the author s obvious laboratory experience could be satisfied with the illustrations of the ova on p 4 or that anyone without such experience could learn anything from them

R T Leiper

SNOWMAN (J) [M D M R C P Lond] **Manual of Emergencies. Medical, Surgical and Obstetric. Their Pathology, Diagnosis and Treatment (Based upon Lenzmann's "Emergencies in Medical Practice").** Second Edition pp viii+361 1926 London John Bale Sons & Danielsson Ltd, 83–91 Great Titchfield Street, Oxford Street W 1 [Price 10s net]

For the general practitioner a manual of handy size devoted to the precise diagnosis and practical detailed treatment of the emergencies met with in practice should prove a useful addition to his armamentarium The volume under review however is one of those compilations which attempt to be all-inclusive and end by including too much while omitting some essentials What is gained by giving some account of the operation for exposure and repair of a wound of the heart while omitting a description of how to perform paracentesis of the tympanum? That diagnosis and treatment should rest upon sound pathology no one will dispute, but it is questionable whether in such a volume as this much is gained by many of the paragraphs devoted to this aspect of the subject As an example—only a reader already familiar with the more recent work in cardiology would be able to follow the gist of the author's rehash of this subject Why drag in such phrases as "circus movement" and "anoci-association" unnecessarily and why describe snake poisons under the fancy term "ophidiasis"? The methods of treatment actually advised are for the most part sound and up to date, but the book as a book has suffered by not having been more carefully prepared, and written from the point of view of the man who will read it, points which in a subsequent edition may easily be overcome and constitute the book a most valuable one

H S Stannus

WARD (Espine) [M D (Belfast), West African Med Staff] **Favourite Prescriptions including Dosage Tables and Hints for Treatment of Poisoning.**—96 pp 1926 London J & A Churchill 7, Great Marlborough Street [Price 5*s* net]

This little book by an officer of the W A M S, is divided into three parts—dosage tables hints for treatment of poisoning and prescriptions It is interleaved throughout Perhaps it is not intended for practitioners in the tropics for in the dosage tables one misses emetine, atoxyl, oleum chenopodii and carbon tetrachloride The prescriptions are arranged under disease headings from Acne to Worms The book can be slipped into the pocket and no doubt will be found useful

A G B

BUREAU OF HYGIENE AND TROPICAL DISEASES.

TROPICAL DISEASES BULLETIN.

Vol. 23.] 1926. [No. 5.

NEW KNOWLEDGE OF MALARIA GAINED FROM ITS THERAPEUTIC USE IN GENERAL PARALYSIS.

By Lt.-Col. Clayton Lane, M.D. (Lond), I.M.S. (Retd.),
Sectional Editor, Tropical Diseases Bulletin.

The two methods of producing infection.—For the treatment of general paralysis malaria has been conveyed in one of two ways: (i) by injection—subcutaneous, intramuscular or intravenous—of the blood of an individual containing malaria parasites, generally *Plasmodium vivax*; (ii) in the natural manner by the "bites" of mosquitoes, usually *Anopheles maculipennis*, which have deliberately been infected by feeding on malaria cases showing gametocytes in the cutaneous blood. The terms "injected" and "natural" are used below to indicate these two conditions.

Although Ley (1924) compares an injection to an immense mosquito bite, there is much to indicate that this is by no means the case; that these two methods are indeed sufficiently distinct to necessitate caution in transferring inductions, made upon injected, to natural cases.

For example: In injected infections disinfestation is extraordinarily easy. To effect complete cure, sometimes clinical, sometimes checked by microscopic examination, the amount of quinine which has been administered has varied from 10 grammes (Doerr and Kirschner (1921)) to 3–5 grammes (Mühlens and Kirschbaum (1924)), while Redlich (1924)) has felt it sufficiently noteworthy to record that he observed a relapse after 5 grammes. Warrington Yorke noted relapse in 2 per cent. of injected cases treated with 6 grammes of quinine (2 grammes on three successive days). On the other hand, after natural infection the work of Warrington Yorke and Macfie (1924), again reported upon by Warrington Yorke (1925), showed a relapse rate of 57 per cent. with the same dosage. Whether Davidson's cases (1925) are included in Yorke's is not clear. He experienced 3·3 per cent. of relapses after injection and 56 after natural infection.

Clearly infections acquired as sporozoits react in this respect differently to those received as trophozoits, and there would seem to be no justification for assuming, without evidence, that inductions from infected can be transferred to natural cases. The two classes should then be separately considered

The incubation period of injected cases has lain between 5 and 31 days It has differed, too, with the tissue-site of injection For example, REESE and PETER (1924) found it to vary from 5 to 8 days in intravenous injection, and from 10 to 25 days with subcutaneous injection For the same methods DATTNER and KAUDER (1924) experienced periods of 4 to 7, and of 6 to 10 days, while for scarification with application of the blood—a normal vaccination technique apparently—the periods lay between 10 and 16 days These times may presumably be correlated with the number of parasites which reach the circulation in these methods, although two patients inoculated at the same time with the same quantity of the same blood may have quite different incubation periods (MUHLENS and KIRSCHBAUM (1924))

Morphology and life history –In inaugurating a strain of *P vivax*, MUHLENS issues the gravest warning as to the care essential to ascertain, by daily examination of the blood, that it is pure For lack of this a number of deaths have occurred from unsuspected contamination with *P falciparum*, and it may be added that when deliberately using *P falciparum*, and making daily examinations of the blood by way of apparently adequate safeguard, there have nevertheless been deaths from fulminating cerebral malaria (YORKE & MACFIE (1924)) But when a pure strain of *P vivax* has been established it has been maintained for years, whether transmitted by injection or naturally, and has throughout retained the morphological characters of *P vivax*, irrespective of season The unicity theory has broken down completely at the first experimental test

There has been a curious diversity of experience regarding the formation of gametocytes For instance, a Palestinian strain of PLEHN'S (1925) ran through 20 passages, covering two years, without gametocytes, and then began to show them Gametocytes are held by many to be indicative of relapse (ZIEMANN (1924)), whereas Warrington YORKE and MACFIE have observed that although the first forms to appear are nearly always trophozoits, yet in all cases gametocytes made their appearance in the peripheral blood two or three days later The gametocyte may then in primary mosquito infection appear very early, may on occasion be the first form discovered in the cutaneous blood, an observation confirmed by STEPHENS and by Gordon THOMSON (1924) It would seem that this early appearance of gametocytes in first infections should be correlated with THOMSON'S observations that a hundred adult Rhodesian negroes showed complete absence of crescents, while these were present in 40 per cent of their children.

Again, Warrington YORKE and MACFIE noted that gametocytes, present in the thirty-fifth, fortieth and forty-first injected passages, exflagellated and developed to oocysts in *A maculipennis*. The observation of sporozoits was unfortunately prevented by the deaths of the mosquitoes Similarly, MUHLENS and KIRSCHBAUM (1924) report the formation of gametocytes in all strains of all three species of parasite transmitted by injection, and ready exflagellation after the fortieth direct transfer. There is then no possible justification for the conclusion of BARZILAI-VIVALDI and KAUDERS (1924) that directly injected cases are no risk to anyone anywhere.

Regarding other forms and stages, MUHLENS and KIRSCHBAUM note that in subtertian cases " tenue " forms have been found in many smears PLEHN notes, regarding the hitherto gametocyte-free strain mentioned above, that at the time when gametocytes appeared it changed from a small parasite, segmenting when about half filling the erythrocyte, to one having ordinary tertian characters

WEBER (1923) notes that in MUHLENS and KIRSCHBAUM'S work, infection never followed injection of blood which contained gametocytes only, so that the ' parthenogenesis " which is now accepted by the French authorities, with no evidence offered, appears to have no experimental basis

The clinical reaction—The same strain of *P vivax*, passed on by injection, may vary in the extent of the bodily reaction induced in the host It may be held to require " refreshing " or become extraordinarily virulent, so that MCBRIDE and TEMPLETON report three deaths in 18 cases, but it appears that, observed over a sufficiently long period, no fundamental alteration in virulence is to be detected (GERSTMANN (1923)) Nevertheless the mortality sufficiently emphasizes the need for daily observation of the blood, even with *P vivax* infection, where the host is debilitated

Quinine—The different action of quinine on early injected and early natural malaria has been noted It is concluded that the results of treatment of injected cases do not indicate directly its value in natural infections Yet, although the results of treatment on early natural do not equal those on early injected cases they are yet an enormous improvement on those attained during the Great War in the same hands, but in repatriated soldiers and, therefore established cases and they indicate the vital importance of immediate and adequate treatment checked by microscopic examination, of all early malarial infections

As a prophylactic YORKE and MACFIE noted that 10 grains of quinine taken daily for 5 days before and 7 days after the individual had furnished a meal to an infective mosquito failed to prevent infection This could only be ensured by continuing this quantity of quinine for 10 days after furnishing the infective feed Against the sporozoit then quinine is apparently ineffective and of little or no prophylactic worth unless taken in curative doses a conclusion which confirms HANSCHELL S African observations (1924)

The direct action of quinine upon plasmodia is negatived by the observation of MUHLENS and KIRSCHBAUM that blood may be mixed with a solution of quinine hydrochloride (so that its strength is 1 in 10,000), left for 12 hours and may yet infect the paralytic into which it is injected and that if the strength be 1 in 5 000, it may lie in this solution for 5 hours and yet infect Warrington YORKE, and WEBER (1923) have severally confirmed this The latter notes that quinine given to a donor does not render his blood malarially harmless to the recipient, while, regarding tertian gametocytes, MÜHLENS and KIRSCHBAUM infected *A maculipennis* in winter with *P vivax* by feeding on a malarial subject who was taking quinine

Immunity and tolerance It has frequently occurred that an injection of malarial blood containing *P vivax* has failed to produce evident infection (WAGNER-JAUREGG (1922), GRANT and SILVERSTON (1924), Warrington YORKE and MACFIE (1924)) Most persons, however, became infected after repetition of the injection In the hands of the last named, infective mosquitoes never failed to produce infection, *A. bifurcatus* as readily as *A. maculipennis.* It may well be, however, that in some of these cases recalcitrant to injected infection, this has actually occurred, has remained latent, and has been made evident by some other factor. Such was perhaps the case in one of YORKE and MACFIE's patients, in whom, *P. malariae* infection not showing by the 39th day, infection with *P. vivax* was undertaken. The quartan plasmodia showed themselves five, and the tertian fifteen days after the second injection. Spontaneous disappearance of parasites and fever has not infrequently nullified the hopes of benefiting the paralytic, since betterment is dependent on the occurrence of a series of heavy attacks. Particularly does this seem to have been the case where there has been previous malaria.

The method of cure of malaria.—The failure of quinine to destroy parasites, when incubated with blood at body temperature and at a strength far in excess of any hitherto found *in vivo,* indicated that it is not quinine which sterilizes. It has been suggested (LIPKIN (1919)) that some plasmodicidal metabolite is formed from quinine. The objection that none has been found does not, in our present state of ignorance, appear cogent. Warrington YORKE and MACFIE hold it reasonable to conclude from their findings that quinine given to one whose blood contains numerous malaria parasites, destroys directly, or more probably indirectly, large numbers but not all of the parasites, thus setting free a considerable quantity of soluble antigen. The antigen provokes, by stimulation of the host's tissues, the formation of immune body. The immune body, if present in sufficient amount, destroys the remaining parasites, thus resulting in sterilization of the infection and cure of the patient.

Regarding *other malarial phenomena* (HERRMANN (1924)) malarial amblyopia was cured by quinine, and gangrene of the toes, initiated by malaria injected into a tabetic, was stopped by quinine administration. PIJPER and RUSSELL (1924) found that after injection of benign tertian malaria, the red blood corpuscles increase by 10 to 30 per cent. before fever appears, and that fever can be cut out by the injection of neosalvarsan.

References.

BARZILAI-VIVALDI & KAUDERS (1924)—*Wien Klin Woch,* xxxvii. 1055–1057. [*T.D B.*, xxii, 56]

DATTNER & KAUDERS (1924).—Klinische und experimentelle Studien zur therapeutischen Impf-Malaria. Leipzig & Vienna: Deuticke, 39 pp. [*T.D B.*, xxi, 614.]

DAVIDSON (1925).—*Jl. Mental Science,* lxxi, 486–490. [*T.D.B.*, xxiii, 148.]

DOERR & KIRSCHNER (1921).—*Ztschr f. Hyg. u. Infektionskr* , xcii, 279–290. [*T.D B.*, xix, 298]

GERSTMANN (1923).—*Ztschr. f. d. ges. Neurol u. Psychiat.*, lxxxi, 255–262. [*T.D B.*, xxi, 615]

GRANT & SILVERSTON (1924).—*Jl. Mental Science,* lxx, 81–89. [*T.D.B.*, xxii, 53.]

HANSCHELL (1924).—*Trans. Roy. Soc. Trop. Med. & Hyg.*, xviii, 57–62. [*T.D.B.*, xxii, 60.]

HERRMANN (1924).—*Med. Klin.*, xx, 445–448. [*T.D.B.*, xxi, 614.]

LEY (1924).—*Bruxelles-Méd.*, v, 1–3 [*T.D.B.*, xxii, 56.]

LIPKIN (1919).—*Ann. Trop. Med. & Parasit.*, xix, 149–176. [*T.D.B.*, xxi, 854.]

Mühlens & Kirschbaum (1924) —*Arch f Schiffs- u Trop -Hyg*, xxviii, 131–144 [*T D B*, xxi, 613]

Pijper & Russell (1924) —*Brit Med Jl*, 1924, Oct 4, 620–621 [*T D B*, xxii, 54]

Plehn (1925) —*Arch f. Schiffs- u Trop -Hyg*, xxix, 56–65 [*T D B*, xxii, 408]

Redlich (1924) —*Wien Klin Woch*, xxxvii, 134–138 [*T D B*, xxi, 615]

Reese & Peter (1924) —*Med Klin*, xx, 372–376; 410–412 [*T D B*, xxii, 55]

Stephens (1924) —*Proc Internat Conference on Health Problems in Trop America*, 70–71 [*T D B*, xxii, 395]

Thomson (1924) —*Proc Internat Conference on Health Problems in Trop America*, 80–81 [*T D B*, xxii, 395]

Wagner-Jauregg (1922) —*Jl Nervous & Mental Dis*, lv, 369–375 [*T D B*, xx, 973]

Weber (1923) —*Geneesk Tijdschr v Nederl -Indie*, lxiii, 234–238 [*T D B*, xx, 974]

Yorke (1925) —*Trans Roy Soc Trop Med & Hyg*, xix, 108–122 [*T D B*, xxiii, 148]

—— & **Macfie** (1924) —*Trans Roy Soc Trop Med & Hyg*, xviii, 13–33. [*T D B*, xxii, 50]

Ziemann (1924) —Mense's Handbuch der Tropenkrankheiten, 3te Auflage, Band 3, xiv+592 [*T D B*, xxii, 338]

BERIBERI.

FUJINAMI (Akira). **Historical Reviews of the Study on Beri-Beri in Japan.**—*Japan Med. World.* 1925. Nov. 15. Vol. 5. No. 11. pp. 314–317.

The author reviews shortly the scientific work done on beriberi in Japan from the 18th century to the present time. He concludes that from the fact that the etiology of the disease is generally of a compound nature and the causative factors are more or less relative in their interaction it seems clear that further investigations are necessary in order to get fuller light on the important subject of kakke. Who can say that the theories of intoxication and infection have entirely failed ? While the results of past investigations have greatly advanced our knowledge, yet they do not leave us satisfied with the present situation. There must be the fullest cooperation between all workers if our labours are to be successful.

P. W. Bassett-Smith.

VERVOORT (H) Het vraagstuk der beri-beri bestrijding op het a s. congres te Tokio. [**The Problem of combating Beriberi at the Coming Congress at Tokio.**]—*Geneesk. Tijdschr. v. Nederl -Indie.* 1925. Vol. 65. No 5. pp. 599–607.

The Congress of the F.E.A T M. at Singapore in 1923 decided to investigate the possibility of prevention of beriberi by legal regulations concerning the polishing of trade rice

Vervoort states that experience on the East Coast of Sumatra has sufficiently shown the relation between beriberi and the consumption of polished rice A table shows how the difficulties of rice importation during the war increased the beriberi mortality. From data supplied by the local Trade Association he calculates that apart from the indentured imported labour force on the estates of Sumatra's East Coast, only one-tenth of the native population is using imported rice (which constitutes the only practical menace in this respect). This part of the population, however, is living at or near the more important towns of the island, where the medical survey is trustworthy, and shows that beriberi is comparatively rare.

The East Coast of Sumatra Section of the Medical Association of the Dutch East Indies accepted the following conclusions :—

(1) On Sumatra legal regulations concerning trade rice could only be applied to imported rice.

(2) The rice import of Sumatra is concentrated in the East Coast district where, apart from the estate labourers, about half of the population is compelled to use imported rice.

(3) Accordingly, legal measures would chiefly concern the East Coast of Sumatra.

(4) The medical control of the estate labourers there is sufficient to prevent epidemics of beriberi, and beriberi is too rare in the rest of the population to justify far-reaching measures.

(5) Gradual education of the natives on the causes of beriberi may be considered sufficient for combating the disease.

W. J. Bais.

Bernard (P. Noël) & **Lambert** (André). Recherches sur le béribéri. [**Researches on Beriberi.**]—*Arch. Insts. Pasteur d'Indochine.* 1925. Oct. No. 2. pp. 153–188. [4 refs.]

The 5th Congress of the Far East Association of Tropical Medicine, held at Singapore in September, 1923 [not 1925, as stated], passed a resolution on the subject of beriberi in which interested Governments were invited to initiate fresh research on the standardization of rice and the effects of its transport and storage. As a result the Governor of Cochinchina nominated a committee of 11 persons, 5 of them chemists, with Dr. Bernard as president, with instructions to prosecute research on beriberi in its relations with a rice dietary. The report, which is here published, is composed of 4 parts, a chemical, a biological and medical, conclusions and appendices, and well merits perusal. The conclusions alone can be given

The nutritive portions of a complete grain of rice, apart from starch and protein, are found in the embryo and integument Factory manipulation, which is necessary for the preservation of rice intended for food, removes both integument and embryo. All the kinds of rice so treated have a similar composition and none contains the 5 per cent of P_2O_5 laid down by previous Congresses as the essential minimum. The authors ask whether this is the case in other rice-producing countries. If so, the standardization of rice resolves itself into the determination of the degree of cleaning which leaves a rice with 500 mgm of P_2O_5, a rice also that will keep and will be accepted by the consumers To contain this proportion the greater part of the germ and integument must be left adherent. But the keeping qualities of stocks of such rice are recognized to be very uncertain. Moreover, rice decorticated by pounding by the very poor, i e , with the minimum of cleaning compatible with the taste of the least exacting consumers, does not reach the proportion of ·4 per cent. P_2O_5 The authors ask whether a rice with a larger content would not have such a taste as to ensure its rejection. The Singapore Conference proposed to call rice containing ·5 per cent P_2O_5 " standard rice " and rice containing a smaller proportion " polished rice." According to the authors these appellations do not correspond with reality and are inaccurate.

There are two factors, humidity and heat, which lead to changes in transported and stored rice. To preserve incompletely cleaned rice it must be kept in a state of fairly strict dryness (dyshydration). This could be ensured as it comes from the factory, but not, in the tropics, when masses of rice are exposed to repeated transshipments, carriage in the holds of ships, exposure in shops, etc.

The measures proposed by several F.E A.T.M. congresses depend on so many variable and indefinable factors that they are impracticable. The first step should be the fixing of a common method of chemical analysis in the Far Eastern countries, such as is given at the end of the report.

The Committee take note of (a retenu) Dr Noël Bernard's conception of beriberi as a toxic infectious disease due to *Bacillus asthenogenes.*

They plead for renewed clinical studies of beriberi under various conditions, supported by laboratory research, including an enquiry into its single or multiple origin.

It is admited by all that the addition of rice bran to white rice is the essential prophylactic measure. The Congress would accomplish this by the preparation of a standard rice incompletely decorticated, the Committee by a different method The bran, an essential product for the physiologic needs of man, is rejected by the rice factory as a by-product of secondary value Immediately after its production it undergoes changes induced by the humidity in which fatty acids are liberated The problem then is to find (1) an industrial process capable of dehydrating the bran and freeing it from fat so as to produce at a moderate price a flour which will keep , (2) a way of putting up this flour in liquid or solid form so as to furnish the peoples with a cheap food which they can add to their rice The richest part of the grain would thus be recovered and used for the nutrition of man

A G B.

DE LANGEN (C D) Rapport omtrent het beri-beri vraagstuk, in verband met een mogelijke internationale regeling ten opzichte van het pellen der rijst, (op het congres te Tokyo uitgebracht) **[Report on the Beriberi Question : a Possible International Regulation as Regards the Milling of Rice (delivered at the Congress at Tokyo).]**—*Geneesk Tijdschr v Nederl -Indië* 1925 Vol. 65 No 6 pp 788–815

In view of the resolutions on the beriberi question, accepted by the 5th Congress at Singapore in 1923 the author gives a complete review of this question in the Dutch East Indies The discordancy in the literature of the last few years concerning the causes of beriberi, which is again ascribed by various authors to toxic and infectious factors, is caused, according to de Langen, by the fact that many cases, and even epidemics of polyneuritis are considered to be beriberi, which actually are toxic or infectious or mixed polyneuritis of other origin Real beriberi is the B avitaminosis in people whose staple food consists of carbohydrates, especially rice At Weltevreden 40 per cent of polyneuritis cases had to be ascribed to other causes than beriberi If polyneuritis is combined with dropsy it is very likely to be beriberi , in the so-called dry cases the differential diagnosis may be difficult In real beriberi the deficiency theory gives the only satisfactory explanation, satisfactory, too, from the possibility it offers of a reasonable and effective treatment

The rice position in the Dutch East Indies is such that to cover its needs the country has to import a quantity of rice of 500 000–600 000 tons, or approximately 12 per cent of its own rice production Only sparsely populated countries with large areas suitable for irrigation can produce in quantities allowing export

In Java beriberi is practically limited to the towns and the agricultural and industrial centres, where—at least during certain parts of the year—the people are compelled to use imported rice The imported rice, exposed to the risk of spoiling by a longer transport, is polished to a further degree than the inland rice to render it more durable Rice cannot be kept for long periods of time without danger of getting bad except in the unhusked state (gaba) or completely polished Insects can be kept away from milled unpolished rice by chloroform or carbon tetrachloride vapour, but this meets with difficulties in practice For standardization of rice in view of its vitamin contents neither the determination of the phosphorus content (which is discussed in detail) nor the spirit test nor the biologic method responds to the needs of practical life

Unpolished rice is unsuitable for international trade; polished rice exposes the consumer to the dangers of beriberi. Therefore, the author thinks that rice should be imported only as gaba (i.e., unhusked), and subsequently handled by local mills where polishing can be done according to the requirements of the market and to any desired degree. Laws could provide for such a regulation and the author thinks that it would not materially interfere with the price of the article. [The economic consequences should be considered more closely, in the annotator's opinion, before far-reaching measures like this are decided upon.]

The use of rice bran made into bread or otherwise for the prophylaxis of beriberi does not seem to have a great scope.

As for the educational campaign against the disease, the author emphasizes the difficulties met with by mentioning an epidemic in a boarding house where meals were taken by several native medical students, all aware of the menace brought upon them by the diet.

W. J. Bais.

GRÄFF (Siegfried). Beriberi und ihre Beziehung zur experimentellen Avitaminose. **[Beriberi. Its Relation to Experimental Avitaminosis.]**—*Med. Klin.* 1925. July 24 & 31. Vol. 21. Nos. 30 & 31 pp. 1112–1114; 1152–1155. [22 refs.]

The author gives a long historical résumé of food deficiency diseases and full details of the morbid anatomy and pathological changes; he finds in these no scientific evidence for any definite theory of origin. It is most difficult to separate the results of starvation from those of avitaminosis. He repeatedly emphasizes the conclusions of OGATA that lack of vitamin B is not the only factor in beriberi, but that the internal glands and changes in the intestinal canal are of great importance; though there is no definite proof of a causative toxin there is much in its favour, especially in oedematous cases. He states that "before beriberi can be regarded as an avitaminosis it is necessary to show that all cases of epidemic beriberi must without exception be attributable to a lack of vitamin B; this evidence we have not yet obtained for infection cannot be entirely ruled out." The value of vitamin B as a curative agent in man and animals may admit of other explanations. [The whole paper is argumentative, contains no new facts and does not appreciably advance our knowledge.]

P. W. B-S.

TRABAUD (J. P. R.). Une petite épidémie de béribéri à forme sèche à Beyrouth. **[A Small Epidemic of Dry Beriberi at Beyrouth.]**—*Arch. Méd. et Pharm. Milit.* 1925. Sept. Vol. 83. No. 3. pp. 270–276.

——. État actuel de nos connaisances sur le béribéri à propos de la relation d'une épidémie de cette maladie observée récemment en Syrie.—*Ibid.* pp. 277–286.

Five cases of beriberi were received into the hospital at Beyrouth in the summer of 1924 in Annamites of a battalion of Indo-Chinese who had left their country more than a year before. The disease was mild and of the dry variety. The polished rice diet was the cause, taken in excess and associated with heavy work. When placed upon hospital diet they very quickly recovered. At Alexandretta there were two fatal cases and the author thinks that this may be an endemic centre. He quotes an instance of the disease appearing among a native detachment one month after arrival at Beyrouth after a long sea voyage with a marked deficiency diet. When once the disease was noted there were many cases, but much less severe than at Aleppo and Alexandretta. He notes that an experienced Commandant reduced the 500 grams of rice to 299 gm. and replaced the deficit by fruit and vegetables ; it is the reduction of quantity and not total suppression that is required. Gardens were encouraged.

P. W. B-S.

PONSFORD (F. W. A.). **Beri-Beri at Thursday Island.**—*Health.* Melbourne. 1925. Nov. Vol. 3. No. 6 pp. 181–183.

The incidence of beriberi at Thursday Island according to the statistics of the Torres Strait Hospital for the years 1923, 1924 and part of 1925 is given and an interesting table shows the amount of the disease in the different races and classes.

During 1924, among the 350 islanders employed in diving, there was only one case. The Filippinos, Japanese and Malays suffered most. The total cases during the year were 97, with 4 deaths, and the financial loss to the island is put down as over £3,000. It is suggested that the disease has been less severe during recent years as compared with the period 1911–1922 reported on by Dr. METCALFE

P W. B-S.

BABLET (J.) & GUILLERM (J.). Les troubles du métabolisme de l'azote et du chlore dans le béribéri sec. [**Disorders of Metabolism of Nitrogen and Chlorine in Dry and Wet Beriberi.**]—*Bull Soc. Path. Exot.* 1925. Nov 11. Vol. 18. No. 9 pp. 735–736

—— & ——. Les troubles du métabolisme de l'azote et du chlore dans le béribéri humide.—*Ibid* pp. 739–742.

It was found from a study of the blood, cerebro-spinal fluid and urine of cases of beriberi that there was a general retention of chlorides in the body, a deficient metabolism of nitrogenous substances and an acidosis which was more marked in the wet than in the dry form The details of the analyses of 8 cases of the latter and 9 of the former are given in the form of tables. It is pointed out that the study of the metabolism of sodium, calcium, phosphorus, sugar and cholesterin, with the changes in the reserve alkalinity during the course of the illness, will give useful information on the functional efficiency of different organs.

P. W. B-S.

HELLER (V. G.), MCELROY (C. H.) & GARLOCK (Bertha). **The Effect of the Bacterial Flora on the Biological Test for Vitamin B.**—*Jl. Biol. Chem.* 1925. Aug. Vol 65. No. 1. pp. 255–264. With 3 charts. [10 refs.]

The work of STEENBACK, SILL & NELSON is quoted as showing the unreliability of many rat tests for vitamin B. One of three theories may account for this—(1) The vitamin in the food is only partially used ; (2) the vitamin is a catalytic substance not destroyed by digestion and therefore capable of acting time after time ; (3) the bacteria in the intestine synthesize vitamin B and store it within their own bodies. *B. phlei*, *B. smegmatis*, *B. moelleri*, perhaps *B. coli com.* and others are believed to do this. The third theory is the subject of the present study. Experiments are described and curves given of the rats used. The following conclusions were reached :—

" 1 Experimental animals kept under the usual laboratory conditions do not respond as quickly to vitamin-free rations as do those given the same ration and placed upon screens

" 2 Feces fed to animals that have ceased to grow on the experimental ration will produce an accelerated growth

" 3 The spore-bearing organisms present in the intestinal tract during the early part of the experiment synthesize and store vitamin B

" 4 Animals kept on pans so they have access to their feces have greater numbers of these spore-bearing organisms during the early part of the experiment because of the reingestion of these organisms The continued growth of these animals is undoubtedly due to the additional vitamin B which has been synthesized and stored by these spore-bearing organisms The organism has not been determined and proof appears inconclusive]

" 5 Animals given roughage in some form make a better growth than those without this material This is especially true when agar-agar is incorporated in the ration

" 6 Extracts of the various forms of roughage used indicate that the substances contain no vitamin but the added bulk produces a better physical condition in the animal '

P. W B–S

SALMON (W D) **Vitamin B in the Excreta of Rats on a Diet Low in this Factor.**—*Jl Biol Chem* 1925 Sept Vol 65 No 2. pp 457–462 With 3 text figs [3 refs]

STEENBACK, SILL & NELSON have shown that the consumption by rats of their own excreta led to errors in the determination of vitamin B The author therefore carried out experiments of which charts are given which show that the faeces of the rats may be rich in vitamin B even when the diet is low in this factor, and that the excreta contained more vitamin B than did the corn and oats of the basal diet. This was not due to the growth of moulds on the faeces, and the reason is not clear His conclusions were in accordance with the above-mentioned authors

P W B–S

PILCHER (J D.) & SOLLMANN (Torald) **Deficient and Surplus Consumption of Vitamin B : their Quantitative Relation to Weight-Changes, and to Vitamin Storage, in Adult Pigeons.**—*Jl Pharm & Experim. Therap* 1925. Oct Vol 26. No 3 pp 203–213. With 4 text figs [3 refs]

Working with pigeons of an average weight of 375 gm kept in metal cages and given yeast extract in gelatine capsules in amounts varying from 19 to 960 mgm. daily, the authors found that the loss of weight bore an inverse proportion to the daily dosage of the yeast extract. The weight curve does not vary whether the experiment follows a period of deficiency B diet or full maintenance of the yeast. If a surplus of yeast has been given before, then the loss of weight may be delayed for a week ; that is, a week's supply can be stored up. The same results were found when a corn diet was used The authors find that the liability to neuritis is apparently an individual trait, for pigeons that showed neuritis on the first experiment with rice and were cured with corn, again developed neuritis when subjected to the rice diet.

P. W. B-S.

COLLAZO (J. A.) & FUNK (Kazimierz). Przemiana witaminy B, jako jednego ze składników pozywienia, i wydzielanie jej u gołebi. **The Metabolism of Vitamine B as one of the Food Constituents, its Excretion in the Pigeon.**—*Medycyna Doswiadczalna i Społeczna.* Warsaw. 1924. Vol. 3. No. 5–6. pp. 359–365. English summary pp. 365–366. [12 refs.]

Vitamin B only appears in the excreta of pigeons when 3–4 times the maintenance dose of this substance is given. The vitamin, therefore, cannot act as a catalyst but actually enters into the processes of metabolism and is used up therein. The stools of pigeons suffering from vitamin B deficiency are of a green colour. The authors regard this as a safe sign of the defect.

A. D. Bigland.

LEVENE (P. A.) & VAN DER HOEVEN (B. J. C.). **The Concentration of Vitamin B. II.**—*Jl. Biol. Chem.* 1925. Sept. Vol. 65. No. 2. pp. 483–489. [2 refs.]

This is a continuation of their previous work to improve the preparation of vitamin B from brewer's yeast. The chemical details must be read in the original, but they were able further to concentrate the yeast extract and from the product a material was obtained which is active in daily doses of 0·600 mgm. and contains only 4 per cent. of nitrogen

P. W. B-S.

CHAHOVITCH (X.). Action de l'insuline sur le béribéri expérimental du pigeon. [**Action of Insulin on Experimental Beriberi in Pigeons.**] —*C.R. Soc. Biol.* 1925. Nov. 27. Vol. 93. No. 34. pp. 1333–1335. [2 refs.]

FUNK has shown in experiments on pigeons that vitamin B plays an important part in the utilization of sugars. The author carried out a number of experiments with pigeons, showing symptoms of polyneuritis, by giving varying doses of insulin. In the treated pigeons he found that the loss of weight was slower than in the control birds, evolution of the symptoms was retarded and the reduction of the temperature was less marked.

P. W. B-S.

BACCARANI (Umberto). Azione della vitamina B sul ricambio minerale (fissazione del calcio). [**Action of Vitamin B on Mineral Exchange (Calcium Fixation).**]—*Riforma Med.* 1925. July 6. Vol. 41. No. 27. pp. 625–627. With 2 charts in text.

The therapeutic effects of mineral salts, those of calcium in particular, are greatly enhanced by their administration in a "live" form, that is, as food rich in the salt, for example, *Cichorium endivia,* a vegetable in common use, and containing a large proportion of minerals, 180 gm. of ash in 1,000 gm. of the dried substance.

The vitamin B acts by fixing or bringing about the retention of calcium in the body. The output of Ca in the urine of 9 patients was estimated before they underwent any treatment. To 6 was then given a mixture containing carbonate and phosphate of calcium; to the other three chloride of Ca only, in syrup and water. After three days of this treatment the patients were given the same, but "in a vitaminized vehicle (vitamin B)." The average results of the analyses were: (1) Before administration of Ca there was 0·336 gm. of Ca in the daily output of urine; (2) during the simple Ca treatment in the first group the average was 0·529 gm., in the second, 0·637 gm. (3) With the vitaminized calcium, in the first group 0·394 gm., and in the second, 0·431 gm. Thus the simultaneous administration of the vitamin B led to retention of the calcium. This was confirmed by estimation of the blood-calcium. Those having the simple calcium mixture showed 0·0982, those with the "polycalcium" mixture 0·0983 gm.; after three days of the vitaminized polycalcium mixture 0·0989 gm. per 1,000.

H. Harold Scott.

BOWMAN (H. H. M.) & YEE (Martin A.). **Crystals of Vitamin B from the Mung Bean.**—*Proc. Soc. Experim. Biol. & Med.* 1925. Jan. Vol. 22. pp. 228–231. With 3 figs.

By a complicated chemical procedure crystals, claimed by the authors to be those of vitamin B, were isolated from a Chinese bean known as the Mung bean The crystals, of which a micro-photograph is given, did not respond to tests for uric acid, amino acids or proteins. Intramuscular injection of the product into pigeons in 3 mgm. doses relieved the acute symptoms of polyneuritis within an hour. Further experiments were made with adult pigeons fed on a restricted diet. To two of the birds intramuscular injections of 3 mgm. of a solution of the crystals were given at three-day intervals; two more birds were kept as controls. All the birds showed a gradual decline in weight, but after the injections a temporary gain was noted owing to renewal of appetite and consequent increase in feeding. [It is not quite clear exactly what the authors hoped to prove by this second experiment. Presumably they have shown that the crystals are not as effective in prophylaxis as they are in therapeusis.]

Experiments were tried in guineapigs, but the advent of scurvy in these animals complicated the result.

A. D Bigland.

i. OHHIRA (Koh). [**On the Basal Metabolism in Beriberi, especially in B. Avitaminosis.**]—*Chugai Iji Shimpo* (*Cent. Med. Jl*). 1925. June. Vol. 44 No. 11. [Summarized in *Japan Med. World.* 1925. Aug 15. Vol. 5. No. 8. pp 217–218]

ii. HIGUCHI (Sakaye) [**On Beriberi-Like Disease of the Chicken and Monkeys by the Feeding with a Species of** *Bacillus Subtilis*]—*Saikingaku Zasshi* (*Jl. of Bact.*). 1925. Apr. No. 350. [*J.M W.* Nov. 15. No. 11. pp. 323–324.]

iii. Ito (Washimi) **[A Contribution to the Knowledge of the Blood of Beriberic Cases and of the Pigeon suffering from Polished Rice Disease.]** —*Tohoku Igakkwai Zasshi* (*Jl. Tohoku Med Soc*) 1925. May. Vol 8 No 2 [*J M W.* Dec 15. No 12 pp. 362–363]

iv. Ohhira (Akira) **[On the CO_2 Diagram of the Blood in Beriberi and B. Avitaminosis.]**—*Ibid* [*J M W* pp 362–363]

v. Ariga (Junzaburo) **[On Beriberi Edema on the View Point of Hypophosphoric Sodium Excretion. Studies on Beriberic Edema. Communication 1.]**—*Hokuetsu Igakkwai Zasshi* (*Jl Hokuetsu Med Soc*) 1925 June Vol 14 No 3 [*J M W* pp 361–362]

i In oedematous and atrophic beriberi, but not in cardiac forms, some alteration of the basal metabolism was observed In experimental B avitaminosis in healthy men there was no definite change from the normal

ii A spore-bearing bacillus was isolated from boiled rice which was not destroyed by the gastric juice but was by pancreatin Cultures of this given by mouth to chickens and monkeys produced beriberi-like symptoms The author thinks that some cases clinically diagnosed as beriberi may be caused by the toxic action of this bacillus

iii The author found that in advanced cases of human beriberi there was a reduction in the red cells, haemoglobin, fibrinogen and blood gas content, a reduced coagulation time and precipitation rate In polished rice disease there was a reduction in the red cells, haemoglobin and viscosity, but the blood protein content and fibrinogen were increased by 50 per cent , the coagulability and precipitin rate was also increased In starvation and in artificially bled animals the red cells, haemoglobin, serum protein and viscosity were all decreased, but the fibrinogen was either unchanged or increased The red cell precipitation rate and coagulability were increased

iv The author found that in beriberi and B avitaminosis there was no accumulation of CO_2 in the blood, although there might be some acidosis The latter he considered was due to an increase of the H ion content of the blood caused by the production in excess in the tissues of organic acids and metabolic by-products which lower the blood alkalinity and finally alter the H ion concentration

v Experiments were carried out to determine the differential causative factors, if any, of beriberi oedema in the initial and advanced stages of the disease The author found that oedematous beriberi might be divided into two forms, firstly, those in which the oedema had no relation to any disturbance of the kidney functions, and secondly, those cases in which the oedema was due to defective kidney excretion, as shown by the hypophosphite of soda test, the deficiency running parallel with the amount of the oedema

P W B-S

SCURVY.

PRISTON (J. L.). **The Prevention of Scurvy in the Navy. With Appendix.**—*Jl. Roy. Nav. Med. Serv.* 1926. Jan. Vol. 12. No. 1. pp. 1–20. [45 refs.]

Surgeon-Commander Priston gives a very interesting historical review of the prevention of scurvy in the Navy and points out how inefficient the modern preparations of lemon and lime juice have been. Incidentally, he states that during the war over 200 cases of ship beriberi occurred in the Navy and that by general agreement lack of fresh vegetables was a predisposing factor. The great disadvantage of modern antiscorbutics such as germinating peas, tomatoes, etc., is the bulk which would have to be stowed on a large ship to provide adequate quantities and also the difficulties of preservation owing to heat, etc He gives a very full description of a preparation of concentrated orange juice manufactured by the Exchange Orange Products Co of San Dimas, California, and marketed by the proprietors of Glaxo. This is now prepared upon a large scale and sold at a moderate price. The author's experiments showed that if kept in cold storage the preparation will retain its antiscorbutic powers for long periods almost unimpaired. The addition of rum reduces its keeping qualities. If kept at 19° C. its potency is reduced to one-third, but is still equivalent to that of an equal volume of fresh orange juice. Kept at 37° C. its value is rapidly lost. Finally, it is stated that if the use of lime juice were abolished and concentrated orange juice substituted a potent antiscorbutic would be issued instead of a useless beverage, and about £4,000 per annum saved The author is to be congratulated upon a very thorough and careful investigation which should be of great value to the service afloat.

P. W. Bassett-Smith.

DUNLOP (Norman J.). **James Cook and the Australian Medical Harbingers.**—*Med. Jl. Australia.* 1925. Sept. 19. 12th Year. Vol. 2. No. 12. pp. 362–373.

In this interesting account of Captain COOK's voyages is recorded the work done to prevent scurvy breaking out and the steps taken to cure it. Attention is particularly drawn to the fact that little credit has so far been given to the medical officers, Dr. Broughton MONKHOUSE and Dr. Wm. PERRY; in fact, Dr. HAWKINS (*Australian Medical Gazette*, 1891) states that Capt. COOK carried no surgeon.

On leaving England, by order of the Admiralty, acting on the recommendation of Dr. MCBRIDE, a supply of malt was to be carried in a dry place to be made into wort, as this might be of great benefit to seamen in scorbutic and other putrid diseases; full records were to be made as to its effect. The malt was to be well ground and infused every day with boiling water for 3 or 4 hours, the wort to be then boiled and made into a panada with biscuit. The infusions was to be drunk and panada taken twice a day.

There were 9 cases of scurvy in all, with 1 death. The good health is attributed by Dr. PERRY to the use of the wort by the crew as a part of the diet at sea.

As prophylactics sauerkraut, mustard, vinegar, wheat, inspissated orange and lemon juice, portable soups, sugar and vegetables were more or less constantly used with excellent results. Cold baths were encouraged, the quantity of salt pork and beef was cut down and the admixture of salt beef fat with flour was forbidden, raisins being used instead The wort was first given to the men who were ill or convalescent from a " bilious disorder " in 1768 When at Rio there was no scurvy At Tierra del Fuego wild celery was collected and used The first scurvy cases appeared on the way to Otahiti PERRY was one of them , they were treated with the wort and greatly benefited PERRY says, " the wort is the best medicine I know, not excepting inspissated orange and lemon juice " The use of MCBRIDE's malt extract was therefore a great success in preventing and curing the disease On the first voyage the death rate from scurvy was 1 per cent , but on the second voyage a larger number was attacked An interesting letter from Dr HULME states that by order of Dr FOTHERGILL the following were sent to the ship A cask of 6 gallons of lemon juice evaporated down to less than 2, a cask of 7 gallons of orange juice and 1 gallon of brandy, a small cask with 5 quarts of lemon juice and 1 of brandy A recommendation was also given to take in fresh orange and lemon juice when possible and to brew beer to be used if the water was bad

P W B-S

WILLIAMSON (R T) **Sir Richard Hawkins and the Treatment of Scurvy in the Reign of Queen Elizabeth.**—*Jl Roy Nav Med Serv* 1925 Oct Vol 11 No 4 pp 269–271 [1 ref]

In ' The Observations of Sir R Hawkins in his Voyages into the South Seas A D 1593 " will be found some of the first references to the value of oranges and lemons in the treatment of ship scurvy, " the plague of the seas and spoyle of marines " He remarks on the very high incidence of the disease in ships, and the great joy with which fresh lemons and oranges were received by all, for their antiscorbutic value was fully appreciated John WOODALL who wrote the ' Surgeon's Mate " published in 1617, had preached the same doctrine

The work of David MCBRIDE, another Naval surgeon " On the Scurvy with a proposal for trying New Method to prevent or cure the same at sea " was published in 1764 He recommended fermented malt as an easy way of providing in ships a growing vegetable substance which might act as a green vegetable and consequently cure scurvy—a piece of deductive reasoning of great acumen and wisdom We have seen (above) how it was provided for Captain COOK and what PERRY thought of it, but it is rather sad to read that after having received news that their Lordships had given orders for his method to be tried at Portsmouth and Plymouth hospitals in 1762, he wrote in 1766, " I take it for granted that nothing has been done in consequence of that order, nor any report made " He was unduly pessimistic, as we have noted, though there is little record of his method having been employed except on Captain COOK's voyages

P W B-S

SCHMITT (Karl) Skorbutversuche am Meerschweinchen [**Scurvy Experiments on Guineapigs.**]—*Klin Woch* 1925 Oct 29. Vol 4 No 44 pp 2104–2105

The author quotes the opinion of MYER & NASSAU that the guineapig test is essential for efficient milk examination , this was founded on their experience at the children's clinic in Berlin where fresh goat's milk was used. The so-called goat's milk anaemia is believed by STOELZNER to be of toxic origin, and due to the reabsorption of a fatty acid with haemolytic action, rather than due to avitaminosis. The author supports FRANKS' view that guineapigs are *not* generally suited for testing infant milk; the animal is so sensitive that the results cannot give a reliable indication of the action on the human organism. Much original work has been carried out by the author, who found that 50–60 grams of goat's milk appeared to protect guineapigs for at least three months. Experiments with butter milk, largely used in children's clinics with success, were also made. Two preparations were used: "Töpfers and Buro" 50 grm. per diem. The animals developed scurvy, but lived twice as long as the controls, and twice as long as those of MYER & NASSAU; from this the author concludes that butter milk protects children against scurvy.

These results cannot be considered conclusive, and the author himself states that further work is desirable.

P. W. B–S.

MOURIQUAND (G.) & BERNHEIN (M.). Nouvelles recherches sur les relations entre l'âge et l'apparition des troubles d'avitaminose C. [**New Researches on the Relation between Age and the Appearance of Scorbutic Symptoms.**]—*C R. Acad. Sci.* 1925. Dec. 21. Vol. 181. No 25. pp. 1103–1104. [1 ref.]

It has already been shown that age of the animals under experiment influences the course of the symptoms and death rate. In guineapigs of 200 to 1,300 grams the course varies from 1 to 18 months. 30 animals were taken, from 70 to 800 grams, the youngest 15 days to 3 weeks old:—

Weight.	Appearance of Pain.	Appearance of Crepitations.
70–200 (10)	13 days	19 days
200–400 (10)	7·5	14·8
600–800 (10)	16·3	25·7

The very young appeared to be more resistant than the older animals, which suggests that the young animals preserve a certain amount of the protective substance derived from the mother. This is similar to what is found in children, for the first symptoms of scurvy only appear after the age of six months.

P. W. B–S.

RANDOIN (L.) & MICHAUX (A.). Réserves glycogéniques et glycémie artérielle (effective et protéidique) au cours du scorbut expérimental. [**Reserves of Glycogen and Arterial Glycaemia in Experimental Scurvy.**]—*C. R. Acad. Sci.* 1925. Dec. 28. Vol. 181. No. 26. pp. 1179–1181. [3 refs.]

The experiments were carried out to show whether in scurvy the glycogen stored in the liver and muscles was reduced or not. The tables show that in the course of the disease the glycogen reserves are less than in normal animals, but there remains even at the time of death a moderate amount. The changes in scurvy are considered to be specific, and should not be confounded with those of starvation. The disturbed alimentary equilibrium resulting from a total absence of vitamin C does not appear to reduce the reserve of glycogen, and it certainly does not alter the free sugar in the blood.

P. W. B-S.

MOURIQUAND (G.) & LEULIER. Avitaminose C (avec ou sans tuberculose) et cholestérine du sang et surrénales. [**Avitaminosis C (with or without Tuberculosis), the Blood Cholesterin, and the Suprarenals.**]—*C. R. Acad. Sci.* 1925. Oct. 5. Vol. 181. No. 14. pp. 434–435. [3 refs.]

The authors have already shown that the cholesterin in the blood of normal and scurvy guineapigs does not sensibly vary ; in the present series of experiments they demonstrate that in acute as well as chronic C. avitaminosis there are marked disturbances of metabolism of cholesterin in the adrenals without any definite effect on the cholesteraemia. This disturbance is aggravated by association of tuberculosis with the avitaminosis.

P. W. B-S.

LINDSAY (Blanche) & MEDES (Grace). **Histological Changes in the Testis of the Guinea-Pig during Scurvy and Inanition.**—*Proc. Soc. Experim. Biol. & Med.* 1924. Dec. Vol. 22. p. 177.

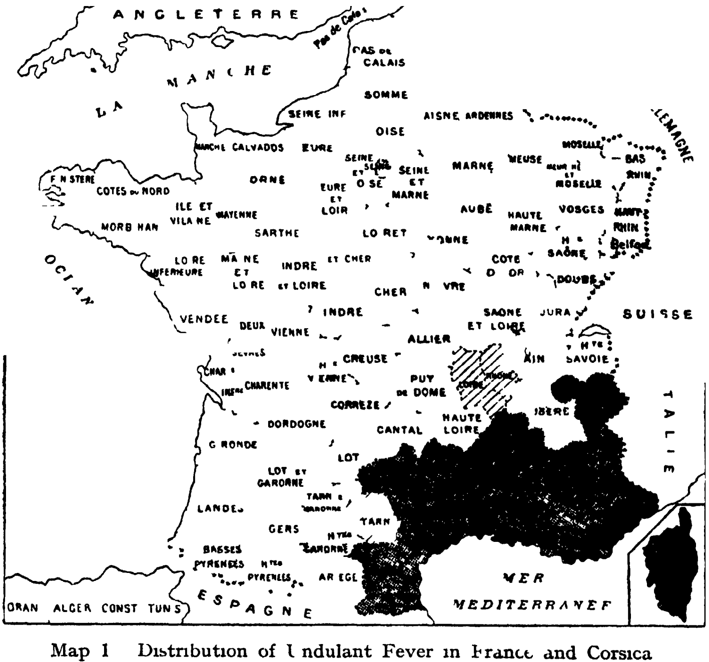
In the histological examination of the testes of guineapigs fed upon a diet deficient in vitamin C, as compared with normal animals, there was found retardation of development in young animals and degeneration of the sperm cells in older ones. Variation in the amount of change in the testis appeared to be parallel to that in the adrenals.

P. W. B-S.

UNDULANT AND ABORTUS FEVERS

AUBLANT, DUBOIS, LAFENÊTRE & LISBONNE La fièvre ondulante en France Distribution géographique Epidémiologie Prophylaxie [**Undulant Fever in France; Distribution, Epidemiology, Prophylaxis.**]—*Rev d'Hygiène* 1925 Dec Vol 47. No 12. pp 1090–1111 With 3 maps in text [7 refs]

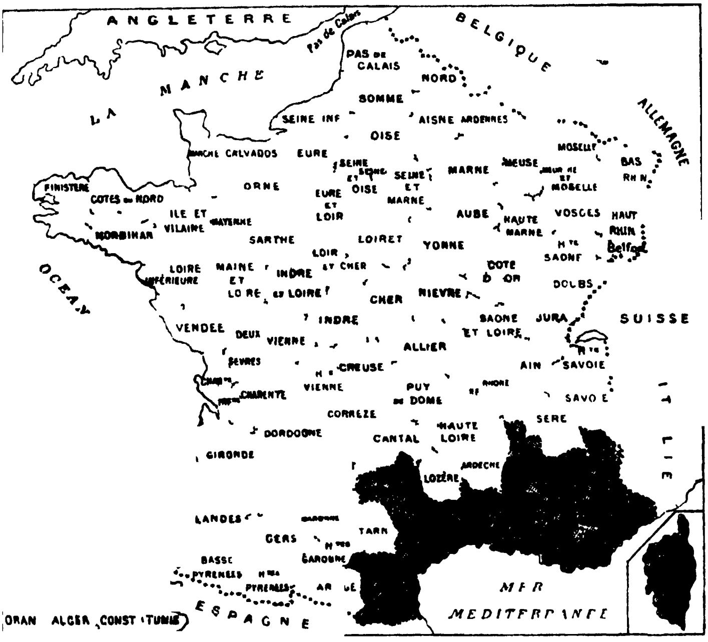
The menace to France of undulant fever was recognized to be so great that in 1923 a full enquiry was determined upon by the Société de Médecine Publique, and the above-mentioned distinguished men, two of whom are veterinarians, were directed to carry it out It was estimated that 3,000–4,000 people in France had suffered from the disease since 1920, and that it was still increasing A questionnaire was sent to the clinicians and laboratories of all the 90 Departments, and replies were received from 84 The first point was to find out the number of Departments infected These were found to be 14, besides Corsica, or one-fifth of the area of France was infected in the region of Languedoc and Provence, namely, the south-east and Mediterranean area The intensity of the infection was more difficult to estimate owing to insufficient laboratory examination, but Drs RANGUE and SENEZ in 1923–4 found 681 cases, proved by serum



Map 1 Distribution of Undulant Fever in France and Corsica
Dark shading—Undulant fever endemic
Light stippled shading—Autochthonous cases occasionally occur
Light diagonal shading—Some introduced cases reported

agglutination and blood cultures, in Bouches de Rhône, Vaucluse, Var and Basses-Alpes. In 5 laboratories 1,181 cases have been proved in the Midi These figures show the great gravity of the situation. The infected area is divided into: (*a*) 15 Departments heavily infected; (*b*) 6 infected, but cases rare; (*c*) 3 areas not infected, but showing cases introduced from without. From the sea the disease had spread to the Alps and Cevennes

Its extension, formerly attributed to the herds of infected goats, is now known to be due also to ewes, which play a rôle as important, if not more so, in the Mediterranean region The charts showing the endemic areas of undulant fever and epidemic abortion of sheep are almost identical, but the returns of bovine epidemic abortion cover practically the whole of France except the area occupied by the first two, to which they are complementary It is impossible to

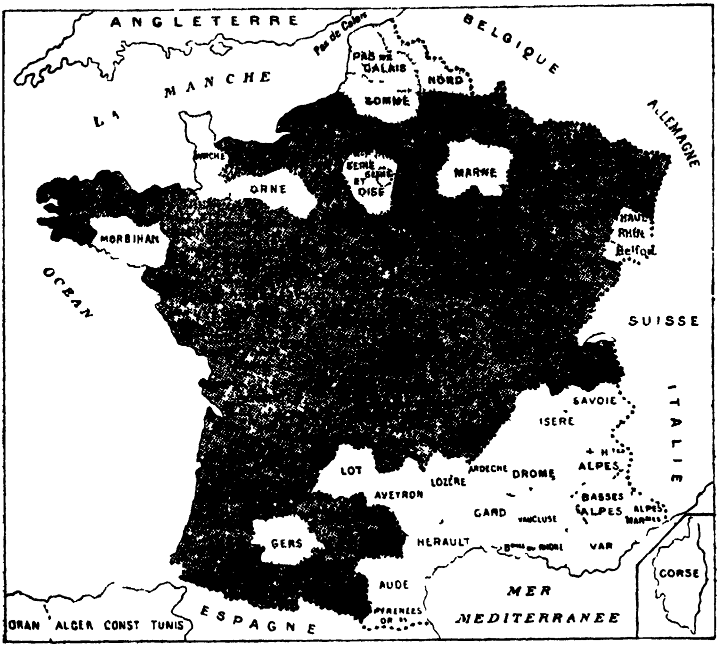


Map 2. Distribution of Epizootic Abortion (goats and sheep) in France and Corsica

Dark shading—Epizootic abortion endemic in goats and sheep

say that this will always remain so, and the authors express their belief that the virulence of the two organisms is likely to alter and the pathogenicity to man to vary.

The method of infection is next investigated, and it is made very clear that direct infection, particularly in country districts, probably by means of infected urine, plays as important a part as ingestion of milk and its products It is interesting to note that the incidence of the disease varies much from year to year; during the great war it was much reduced again to rise in 1920 owing to increased trade and intercommunication. In 1900–1 two or three Departments only were infected, *to-day there are fifteen,* and the steady spread of the disease northwards is very serious. Much is written about prophylaxis and the necessity of strict measures to prevent the use of infected material and about the isolation of infected animals, which must be enforced by law. If the disease is to be overcome it must be recognized that sheep as well as goats are " carriers " and that infection is caused by other means than food. The veterinary officer must work with the hygiene department.



Map 3. Distribution of Bovine Epizootic Abortion in France and Corsica

Dark shading—Epizootic abortion endemic in cows and mares

Light stippled shading—Departments from which information is not available

[Maps 1 to 3 are reproduced from the *Revue d'Hygiène*]

The enquiry forms sent out are reproduced, and suggestions are made for further investigations. The paper is most valuable and tends to dissociate the abortion of cattle from undulant fever which is closely correlated with the epidemic abortion of ewes and goats.

P. W. Bassett-Smith.

Barbary (Fernand). Prophylaxie de la fièvre ondulante dans les Alpes-Maritimes. **[Prophylaxis of Undulant Fever in the Alpes-Maritimes.]**—*Rev. d'Hygiène.* 1925. Dec. Vol. 47. No. 12. pp. 1134–1139.

Undulant fever was first noted in this area in 1910, but has become much more prevalent in the last few years. Cases are probably missed because knowledge of its clinical characters and diagnosis is not general. The author emphasizes the point that besides measures against the use of infected milk and cheese, the indirect factors must be combated. These are sale and transport of sick animals, manure infected by sick goats, etc., which is inoculated through the skin, and possibly mosquitoes. For prophylaxis one must insist upon the boiling of all milk, proper sanitary measures for stables and manure, isolation of all infected animals and penalties for the sale of milk from these.

P. W. B-S.

DARGEIN & BELLILE Considérations sur l'étiologie et la prophylaxie de la fièvre de Malte dans la région toulonnaise. [**The Etiology and Prophylaxis of Undulant Fever in the Toulon Region.**]—*Rev. d'Hygiène.* 1925. Dec. Vol. 47 No. 12. pp. 1140–1144.

In the region of Toulon undulant fever is relatively common but sporadic in character. Infection is traced to the use of the milk or cheese of goats and ewes An instance is given where 7 sub-officers were infected by a puppy which lived and ate with them. Laboratory infection and the contamination of utensils by urine are well known, but inter-human or hospital infection is very rare. All prophylactic measures must be based upon the above facts.

P. W. B-S.

CASSAN (A.). La fièvre méditerranéenne dans l'Aude. [**Undulant Fever in the Aude Department.**]—*Rev d'Hygiène.* 1925. Dec. Vol 47. No. 12 pp 1144–1147.

The department of Aude near the Pyrenees is partly mountainous and little populated, partly flat and well cultivated. In the former the number of goats and sheep is large, and they are widely scattered, travelling much. It is believed that the disease was introduced from the south. At least 150 cases have been reported, one-tenth of which were in children, the greater number, however, being men employed on the land. The cause did not appear to be the consumption of milk and cheese, but rather cutaneous infection from manure, etc. The history of 31 cases demonstrates this. Infection of food by contaminated hands is also very probable and infection of water is said to be an occasional cause.

P. W. B-S.

RANQUE & SENEZ La mélitococcie en Provence au cours de ces dernières années.] [**Undulant Fever in Provence in Recent Years.**]—*Marseille-Médical* (*Bull. mensuel Soc Méd. et d'Hyg coloniales de Marseille*). 1925 Oct 25 pp 1684–1691 [Summarized in *Bull Inst Pasteur.* 1925. Dec. 31. Vol. 23. No. 24. p 1071]

From January 1920 to October 1925 the authors have identified in their laboratory 904 cases of undulant fever They recognize that the disease is common in Provence and that it is advancing northwards, the cases being most frequent in the spring. The movement of herds in changing pasture is the most dangerous means of propagation. For positive determination they consider that sedimentation with a complete clearing of the suspension after 18 hours at 37° with a minimum dilution of 1 in 200 is reliable.

P. W. B-S.

BURNET (Et.). La fièvre méditerranéenne, spécialement au point de vue exotique. [**Undulant Fever, chiefly from the Exotic Aspect.**]—*Rev. d'Hygiène.* 1925. Dec. Vol. 47. No. 12. pp. 1112–1129.

It is well known now that centres of undulant fever are widely distributed all over the world, but chiefly in sub-tropical and temperate zones, and that the disease tends to spread in the latter. The principal source of infection is the udder of the goat, and it is still doubtful whether the udder of the cow infected with *B. abortus* is another source; if so, eradication would be much more difficult. The points for and against the unity of the two organisms are clearly put forward. Though the intradermal method, according to the author, is the best for diagnosis in the human disease, it cannot be applied in the caprine. Again, man can be vaccinated against undulant fever, but this is much more difficult in the goat; vaccination should be employed in very young kids.

Immunity and the protection of infants through the mother are discussed, but nothing new is brought forward.

P. W. B-S.

TANON (L.) Le mélitococcie peut être considérée comme une fièvre intermittente [**Undulant Fever an Intermittent Fever.**]—*Bull. Méd* 1925. Nov. 7. 39th year No 45. pp. 1197–1198.

The irregularity of the fever and uncertainty of laboratory procedures in undulant fever are pointed out, but its septicaemic character is accepted by the author. He thinks that the disease would be better described as an intermittent septicaemia, the organism being present in the blood during the attack, the antibodies at the decline, and it is at these particular periods that blood culture, serum tests and treatment should be of most use. He lays much emphasis upon the intermittent appearance of agglutinins in the blood as proof and quotes a case with following notes:—

Agglutination.	1-10	1-30	1-50
Onset of attack	—	—	—
Rise of temperature .	—	—	—
Acme	—	—	—
Commencement of fall ...	+	+	+
During fall . ..	—	—	—
Apyrexial period	—	—	—

[This most certainly is not a common finding; *vide* abundant work done at Malta and in England, though absence of agglutination response has frequently been noticed, particularly in chronic cases. Short negative phases have been demonstrated also It must not be forgotten that " Melitococcie " is protean in its clinical and serological characters, and that deductions from a few cases are often erroneous.]

P. W. B-S.

DOMINGO (Pedro). El tratamiento especifico de la fiebre de Malta. [**Specific Treatment of Undulant Fever.**]—*Rev. Méd. de Barcelona.* 1925. Sept. Year 2. Vol. 4. No. 21. pp. 240–248. With 6 charts.

By cultivating *M. melitensis* in an acid medium emulsions were obtained which were more readily agglutinated than ordinary agar cultures, while those treated with ox-bile were still more agglutinable.

63 cases of undulant fever were given vaccines by mouth and 41 of them (65 per cent.) were cured in less than 15 days, 11 more within 30 days, while only 7 relapsed. The method of preparation of the vaccine was as follows :—

Freshly isolated organisms were cultivated on agar and emulsified in sterile water. On addition of a mixture of alcohol and ether in equal parts the bacilli were precipitated The fluid, after contact for 12 hours, was decanted and the sediment subjected to the action of sterile filtered ox-bile, the whole being well shaken to obtain a uniform emulsion. The bile was then removed by repeated washing in sterile saline and centrifuging The residue was weighed and diluted in the proportion of 100 cc. of a mixture in equal parts of water, neutral glycerine and alcohol (90 per cent) to each gramme

1 cgm. of the bacterial emulsion, *i.e.*, 1 cc. of the final product, was given daily till 6 days after the fever had subsided, the dose being taken fasting by mouth and no food allowed till two hours later.

H. Harold Scott.

HAUDUROY (Paul) & PACAULT. Un cas de fièvre de Malte à Paris. Traitement par la vaccinothérapie. [**A Case of Undulant Fever at Paris treated by Vaccines.**]—*Rev d'Hygiène.* 1925 Dec. Vol. 47. No. 12. pp. 1129–1134. [6 refs]

A girl aged 14 whose symptoms commenced in January 1925, about ten days after eating fresh goat cheese in Rheims, was at first treated for enteritis without fever. In April there was high fever with sweats and some arthritic pains. The fever became more septicaemic in type, and a blood culture gave a pure growth of *M. melitensis*, from which a vaccine was made. The intradermic reaction was positive. The first vaccine given consisted of 50,000,000 organisms, the second 100,000,000, and after that 200,000,000, repeated every second day, eight doses in all. Improvement was rapid and sustained. The author states that this case controverts the statement of COURY and others that the administration of vaccines is dangerous in this disease, and he points out that the good result was entirely due to laboratory help in diagnosis and treatment.

P. W. B-S.

ODDO (C) [Note sur le traitement de la fièvre de Malte par l'autohémothérapie] **Treatment of Undulant Fever by Autohaemotherapy.** —*Marseille-Médical* (*Bull mensuel Soc Méd et d'Hyg coloniales de Marseille*). 1925. Oct. 25 Year 62 pp. 1700–1702 [Summarized in *Bull. Inst. Pasteur.* 1925. Dec 31. Vol 23. No. 24. p 1091.]

In three cases of auto-haemic inoculation in undulant fever the author obtained good results. He takes 5 cc of blood from the arm, and 2 cc. of the citrated serum is injected subcutaneously, and repeated every third day until the fever ceases.

OLMER reports less constant good results

P W B-S.

BOX (C. R.) & BAMFORTH (J.). **A Case of Undulant Fever contracted in England, and complicated by Haemorrhagic Effusion into the Peritoneal Cavity.**—*Lancet.* 1925. Nov. 28. pp. 1115–1116. [1 ref.]

A case of prolonged fever is described in which there was a very definite serum agglutination to a high titre both with the *M. melitensis* and *B. abortus*, but the infecting organism was not isolated from the blood or urine The case is of special interest for its contraction in England apparently through the use of raw goat's milk (which was afterwards proved to be infected by one of the group), the irregular character of the fever and the occurrence of an haemorrhagic non-infective ascites.

The incubation period is put down as 10 days and the duration of the disease as 5 months Though the man had served in France during 1917 there was no history of illness beyond influenza and trench fever

[The infection of the goat does not appear to have been followed up This is an important point, for no case of Melitensis infection of goats in England has been previously described, and if the animal was infected with *B abortus* it should have been notified The cause of the fever is so far not definitely proved]

P W B-S

MACKEOWN (R J) **Malta Fever.**—*Jl Roy Nav Med Serv* 1925. Oct Vol 11 No 4 pp 295–298

The case of an officer suffering from undulant fever which practically incapacitated him for twelve months The disease was contracted on the Mediterranean station (place not mentioned) and treated at the Naval hospitals of Malta and Chatham Though there was no doubt as to the diagnosis, the serum reactions with *M melitensis* were very slight or negative, and no paramelitensis or melitine tests are recorded At Malta three intravenous injections of N A B were given, but without beneficial effect, and specific vaccines were not tried

P. W B-S

MICHELI (F) Forma pseudo tubercolare di febbre maltese [**Pseudo-tuberculous Form of Undulant Fever.**]—*Riforma Med* 1926 Feb 1 Vol 42 No 5 pp 110–111

This is a record of another case of undulant fever showing signs suggestive of tuberculous infection namely, fever sweating some degree of wasting and anaemia localized râles a troublesome dry cough and a positive reaction to tuberculin, but no acid fast bacilli were found The patient's serum in a dilution of 1 800 agglutinated *M melitensis* and the organism itself was obtained by haemoculture during the second febrile period As the general symptoms yielded to treatment so did the local pulmonary signs disappear *

H Harold Scott

KIRSCHNER (L) & KUNST (C) **Infectious Abortion in Cows in the Netherlands East Indies and its Significance for the Human Pathology.**—*Meded Dienst d Volksgezondheid in Nederl -Indie.* 1925. Pt 3 pp 270–291. [23 refs]

A very full account is given of the prevalence, epidemiology and etiology of infectious abortion of cattle in the Dutch East Indies, and it is again stated that the bacillus of Bang and the micrococcus of undulant fever cannot be distinguished *in vitro* or by animal experiments, though no fresh proof is brought forward If the organisms are identical the disease should be common among the staff of the infected farms , this has not been reported, though stable attendants tested had a high agglutination titre Rules for prophylactic vaccination of animals are given , the authors do not favour the use of living vaccines, as they are dangerous, except in seriously infected herds where rigorous isolation can be carried out

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* [In the early years of 1900–1907 cases diagnosed as Mediterranean phthisis were fairly frequent in the Navy in that area which entirely cleared up after the fever was cured—and in which no T B were found—but tuberculin tests were not made]

P. W. B-S.

P W B-S

TINTI (Mario) Sulla questione della setticemia umana da bacillo di Bang [**Septicaemia in Man due to Bang's Bacillus.**]—*Riv di Clin Med* 1925 Sept 30 Vol 26 No 18 pp 649–666 With 8 text figs [10 refs]

This paper constitutes an interesting record of observations to test the validity of the method of FICAI and ALESSANDRINI for differentiating *M melitensis* from *B abortus* (see this *Bulletin* Vol 22, p 511) Details of three patients are given all confirming the same points One example may be presented here A man, 29 years of age, had not drunk goats' milk nor partaken of any of its products , he always took fresh cows milk A fortnight after attending an aborting cow he developed a febrile condition in all points resembling undulant fever. His serum reactions were as follows positive agglutination up to 1 1,000 with three strains of each organism After heating to 65° C for 30 minutes, diluting first with distilled water and later with saline, according to FICAI and ALESSANDRINI s method, the results were negative with both at first but after standing at room temperature for 24 hours the agglutinative powers returned in part but equally for each organism Serum from the aborted cow agglutinated two strains of *B abortus* in a dilution of 1 1 200 and a third at 1 1,000, and two strains of *M melitensis* at 1 1,200 but with a third was negative The same serum after heating was negative to both By puncturing the patient s spleen an organism was grown which, morphologically and biologically, was identical with *M melitensis* (or *B abortus*) and was agglutinated by immune sera against either at a titre of 1 5,000, and by the patient s serum at 1 1,200

In the latter part of the paper is an account of experimental work carried out with the two organisms and various antisera, some made by the author, and others obtained commercially and it was found that the agglutinating power was removed by heating to 65° C in all the samples The question is posed ' May not the organism of contagious abortion be the cause of undulant fever ? " in other words, may not the two organisms be identical since, neither culturally, morphologically, nor serologically, are there any really valid distinctions ?

H Harold Scott

FAVILLI (Giovanni) Ricerche comparative sulla morfologia del *b melitensis* e del *b abortus* (Bang) [**Comparative Work on the Morphology of *B melitensis* and *B abortus***]—*Sperimentale.* 1925 Vol. 79 No 6 pp 1041–1048 With 1 plate [26 refs]

A study of the structure of *M melitensis* and of *B abortus* by means of vital staining and dark-ground illumination shows that there is no true motility of either in a broth culture of the organisms ; that each contains the refractile intracellular granules ; that some members show a comparatively thick prolongation at one end analogous to a terminal cilium ; and that these are, therefore, not differentiating criteria.

H. Harold Scott.

VERCELLANA (Giuseppe). Differenziazione microscopica del micrococco melitense dal bacillo di Bang col metodo di Bezssonof. [**Differentiation of** *M. melitensis* **and** *B. abortus* **by Bezssonof's Method.**]—*Pathologica.* 1925. Oct. 15. Vol. 17. No. 406. pp. 553–554.

BEZSSONOF in 1919 proposed three staining methods for the differentiation of *B. coli* from *B. paratyphosus B.* The author carried out the same procedures with *M. melitensis* and *B. abortus,* and finds that the staining reactions by methods (2) and (3) give identical results, but that by BEZSSONOF's first method *M. melitensis* is stained red, *B. abortus* blue. The details of this method are :—

The preparation (apparently a smear on a slide) preferably of a young culture is submitted for 20 hours at 37° C. to the action of a mordant composed of bichromate of potassium (gr. 1), tartar emetic (gr. 0·40), in water (100 cc.). The slide is then washed, first in tap-water and afterwards in repeated changes of distilled. It is next placed in 0·17 per cent. solution of Wasserblau for 2 hours at 100° C. and again washed in tap and distilled water successively. This is followed by immersion in 0·07 per cent. chrysoidin in distilled water for 1½ hours at 100° C. and three washings in distilled and three in tap-water. Finally, it is treated with Bengal-red (0·32 per cent. in distilled water) for ¼ hour at 65° C. and 14 hours at 37° C. After being washed in distilled water it is dried and examined.

H. Harold Scott.

EVANS (Alice C.). **Geographical Distribution of the Serological Groups of** *Brucella melitensis.*—*Amer. Jl. Trop. Med.* 1925. Nov. Vol. 5. No. 6. pp. 419–423. [1 ref.]

After discussing the wide geographical distribution of undulant fever and its occurrence in goats, sheep, dogs and cattle the author points out that in 2 out of the 6 cases in America due to the abortus variety of the organism infection was caused by handling hog carcasses in slaughter houses. Though abortus infection is very common, human cases are very rare compared with those that occur in the Mediterranean countries due to goats. From serological data, arrived at chiefly by absorption methods, a table is drawn up showing that the infection of *Brucella melitensis* var. *abortus* is not limited to any particular species of animals. Of the 8 serological groups, 4 of the abortus section are confined to the United States and the countries of northern and central Europe, whereas 4 groups, namely para-abortus, melitensis A and B, and para-melitensis are confined to the Mediterranean countries. An exception is the variety melitensis A, which exists along the Mexican border and sporadically in other parts of America. The abortus variety is characteristically a bovine affection, but also affects hogs and man. Finally, as both types of organism cause clinically typical " Malta " fever in man, and a similar kind of disease in animals, the two should be considered to belong to a single species.

P. W. B-S.

CANALE (Piero). Sulle intradermoreazioni a scopo diagnostico nelle febbri infettive (tifo e melitense). **[Diagnostic Intradermal Reactions in Typhoid and Undulant Fever.]**—*Riv. di Clin. Med.* 1925. July 30. Vol. 26. No. 14. pp. 527–536. [10 refs.]

Previous attempts to establish cuti-reactions for the diagnosis of fevers of the melitensis-typhosus group having yielded uncertain results, the author, thinking that the broth-proteins might be responsible for the local reactions, prepared his " antigens " by emulsifying agar cultures of the various bacilli in distilled water, killing them by heating to 60° C. for an hour, centrifuging to throw down the organisms, and drying the precipitate at 37° C. For the test 1 cc. of distilled water and 1 drop of 5 per cent. carbolic acid were added for each mgm. of the dried residue. The local condition was noted at intervals of 2–48 hours after the intradermal inoculation of 0·1 cc., and the maximum reaction was found to be reached in 12–14 hours, after which time it gradually faded. The results are interesting. A melitensis antigen gave a strong positive in 18 cases of undulant fever, a weak positive in 4 cases of typhosus and 2 of *B. paratyphosus B* infection. *B. typhosus* antigen proved negative with melitensis infection, markedly positive (+++) with typhoid cases, less marked (++) with paratyphoid; corresponding results were obtained with *B. paratyphosus B* antigen. All three antigens gave a weak or doubtful positive (±) in tuberculous subjects. In 60 control patients the result was entirely negative. The test is most specific, therefore, for undulant fever, less so in the typhoid-paratyphoid group.

H. Harold Scott.

CANALE (Piero). L'inattivazione dei sieri nella melitense. **[Inactivation of the Serum in Undulant Fever.]**—*Riv. di Clin. Med.* 1925. Sept. 15. Vol. 26. No. 17. pp. 631–636. [15 refs.]

In view of the uncertainty of results of the agglutination test for undulant fever, in other words the non-specificity of the test which some writers have recorded, and the suggestion which has been made that heating the serum to 56° C. for half an hour did away with this by getting rid of co-agglutinins, the author tested 600 sera during the course of two years. He concludes: (1) That inactivation, that is, heating as above, is not only useless, since irregular positives are still obtained in low dilutions, but that it is harmful in that some sera which agglutinated at 1 : 600 lost the power completely and did not regain it, or only partially, on standing at room temperature; (2) that reactions at lower titres than 1 : 200 should be disregarded, since sera of patients with pulmonary abscess, or influenzal bronchopneumonia, for example, may agglutinate to that degree; (3) that the character of the flocculation is important. This, with a patient's serum in a positive case, is bulky, definite and clean cut (frastagliati), whereas in doubtful or non-specific cases it is fine, powdery and indefinite. This flocculation is not so marked with animal immune sera. The result of heating a patient's serum to 56° C. for half an hour in some instances transformed the definite bulky flocculation into the indefinite turbidity of non-specific agglutination.

H. Harold Scott.

i DE GASPERI (F) [Sintomi e lesioni nella infezione nella camera anteriore dell' occhio del coniglio da micrococcus melitensis] [**Symptoms and Lesions in Melitensis and Abortus Infections of the Anterior Chamber of the Rabbit's Eye.**]—*Soc Toscana di Sc Naturali Memorie.* Pisa 1925 Vol 36

ii —— [Infezione della cavia e del coniglio da bacillo di Bang inoculato nella camera anteriore dell' occhio (Reperti anatomo-istologici e sierologici)]—*Ibid* Vol 37 [Both summarized in *Bull Inst Pasteur.* 1925 Dec 31 Vol 23 No 24 p 1074]

i When strains of *M melitensis* were inoculated into the anterior chamber of the eyes of rabbits the results were irregular After the early signs in some the lesion quickly cleared up, but in others it went on to plastic iritis

ii After inoculation of *B abortus* in both guineapigs and rabbits there might be early congestion, oedema of the iris with lymph, vascularity of the cornea and diffused keratitis Since *M melitensis* produced the same results this method is of no use for differential diagnosis

P. W. B-S.

DENGUE.

SILER (J. F.), HALL (M. W.) & HITCHENS (A. P.). **Transmission of Dengue Fever by Mosquitoes.**—*Proc. Soc. Experim. Biol. & Med.* 1925. Dec. Vol. 23. No. 3. pp. 197–201.

This is a summary of the results of experiments relating to the transmission of dengue by mosquitoes carried out by the American Medical Research Board at Sternberg General Hospital, Manila. The only forms likely to be concerned in the transmission of dengue were *Aëdes egypti* and *Culex quinquefasciatus* (*C. fatigans*). All the mosquitoes used were bred from the egg and carefully fed. At first normal horse serum with formalin was used ; later banana was found to be the best diet. Freshly bred *Aëdes* would not bite on the day of their emergence, but after having taken food and been fertilized they took blood freely.

Sixty-four military volunteers, non-immunes and free from the disease, were used. Dengue was produced experimentally in 52 instances, or 81 per cent. In 111 biting experiments with *Aëdes egypti* there were 47 positives ; of 7 with the culex, all were negative. The previous experiments showing that *Aëdes* transmits the disease were fully confirmed. The mosquitoes were not infective until the 11th day. The patient was only infective to the *Aëdes* during the first three days, and not in the period before the onset The experiments showed that once infected *Aëdes* is able to transmit throughout its life but not to the next generation. The incubation period of the disease in the 47 experimental cases varied between 4 and 10 days. In 41 of the 47 cases the virus was from the same strain and was passed from man to mosquito and back to man through 6 generations. It was not attenuated, nor was the virulence increased 50 per cent. of the positive cases were bitten by from 2 to 10 potentially infected mosquitoes.

P. W. Bassett-Smith.

CHANDLER (Asa G.). **The Transmission and Etiology of Dengue : a Critical Review.**—*Indian Med. Gaz.* 1925. Oct. Vol 60. No. 10. pp. 460–462. [14 refs.]

This paper hardly fulfils its claim to be a critical review. Some recent papers are discussed on the etiology of dengue, particularly those of MEGAW, and SILER, HALL & HITCHENS [this *Bulletin*, Vol. 22, p. 943]. The conclusions of the latter are generally accepted by the author with the reservation of that which states that the dengue virus requires 11 days or more for development in the mosquito before transmission can occur, which was based on three cases only. Chandler and RICE succeeded in transmitting the disease in 4 out of 6 cases with mosquitoes which had been infected 24, 48, 72 and 96 hours ; this agrees better with epidemiological observations than the finding of the authors quoted. Chandler states that the specificity of disease organisms to particular species of insect transmitters is as a rule not absolute, as in malaria ; yellow fever on the other hand has a highly specific insect vector. The fact that yellow fever and dengue are transmitted by the same mosquito does not necessarily indicate that the infecting organisms are related.

P. W. B–S.

MORISHITA (K.). **Changes and Progress in the Scientific View of the Relations between Mosquitoes and Dengue Fever.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1925. Oct. No. 247. English summary p. 7. [In Japanese.]

The author reviews the literature on the subject from GRAHAM'S work in 1902 to that of SILER, HALL & HITCHENS in the Philippines (1925). He concludes that *Aëdes egypti* (*S. fasciata*) is the chief agent in the dissemination of dengue, but that especially in Formosa *Aëdes albopicta* (*S. scutellaris*) must be held responsible

P. W. B-S.

HALL (Milton W) **The Occurrence of Spirochete-like Filaments in the Blood of Dengue Patients and in Normal Individuals.**—*Amer. Jl. Trop Med* 1925. July Vol. 5. No. 4. pp. 307-315. With 8 text figs [10 refs]

The author calls attention to the filaments which appear in blood and which may be confused with spirochaetes It is suggested that the spirochaetes described by COUVY and VERWOORT from dengue and allied fevers may be of this type as well as those described by BLANCHARD and LEFROU Filaments of this kind have been noted by many observers (see this *Bulletin*, Vol 21, p 281)

C M. Wenyon

ROCKY MOUNTAIN FEVER.

SPENCER (R. R.) & PARKER (R R.). **Rocky Mountain Spotted Fever: Vaccination of Monkeys and Man.**—*Public Health Rep.* 1925. Oct. 9. Vol. 40 No. 41. pp. 2159-2167. With 3 figs. on 2 plates & 2 charts in text. [3 refs.]

The authors report that they have prepared a protective vaccine for Rocky Mountain fever from infected adult ticks, but up to the present the potency, keeping qualities and duration of the immunity given have not been fully worked out. The vaccine will protect guineapigs, rabbits and monkeys (*M. rhesus* and capuchins). In 34 vaccinated persons the reactions were generally mild. Intradermal reactions would be useful for hypersensitiveness. The virus-neutralizing substances can be demonstrated. The outcome of a case of Rocky Mountain fever developing 8 days after the first dose of the vaccine suggests that the infection was modified. It is thought that the vaccine might be used each spring in those persons who are constantly exposed to the infection.

P. W. Bassett-Smith.

WATANABE (Yoshimasa) [**Experimental Studies on Rocky Mountain Spotted Fever.**]—*Saikingaku Zasshi.* (*Jl. of Bact*) 1924. Oct. No. 344 [Summarized in *Japan Med. World.* 1925. May 15. Vol. 5 No 5. p. 132]

The author observed that the virus infected guineapigs, but not rats. In the former the symptoms developed after an incubative period of 2 to 10 days, and the virus was found abundantly in the blood. It was non-filterable and was weakly resistant to carbolic acid, but much more so to alcohol; the pure virus could be obtained by adding 5 per cent. of alcohol. It was found only in the plasma layer when the infected blood was centrifuged.

P. W. B-S.

LA BIER (C. R.). **[Rocky Mountain Spotted Fever in Indiana; Report of Case.]**—*Indiana State Med. Assoc. Jl.* Ft. Wayne. 1925. Nov. 15. Vol. 18. p. 418. [Summarized in *Jl. Amer. Med. Assoc.* 1926. Jan 9 Vol. 86. No. 2. pp. 149–150.]

The case was that of a girl of Terre Haute, who had not left the city. She was bitten behind the ear by "a brown and black bug." There followed lymphangitis, then headache, fever, a skin rash and pronounced drowsiness, the latter symptom being very marked during the first three weeks of the sickness.

P. W. B-S.

JAPANESE RIVER FEVER.

ISHIWARA (K.) & OGATA (N.). Studie ueber den Erreger der Tsutsugamushi-Krankheit (Ueberschwemmungsfieber). **[The Agent of Tsutsugamushi Disease.]**—*Scientific Reports from Govt. Inst. for Infectious Diseases.* Tokyo. 1924. Vol. 3. pp. 41–42. [1 ref.]

It is stated that two years ago two monkeys were successfully infected with the disease from man and the virus was passed to other monkeys. Histologically the small rickettsia-like bodies were found in the tissues and cultures from the blood were with difficulty obtained similar to those obtained from man. The organism is very pleomorphic. In monkeys the inoculations caused a lymphangitis and orchitis.

P. W. B-S.

NAGAYO (M.), TAMIYA (T.), IMAMURA (A.), SATO (K.), MIYAGAWA (Y.) & MITAMURA (T.). **Demonstration of the Virus of Tsutsugamushi Disease.**—*Scientific Reports from Govt. Inst. for Infectious Diseases.* Tokyo. 1924. Vol. 3. pp. 37–40. With 1 plate.

The work of the authors confirms much that has been previously described and places the infecting organism of tsutsugamushi fever among the non-filterable, doubtfully cultured viruses of the Rickettsia type. They found that the intradermal was more satisfactory than the subcutaneous method of inoculation, producing typical ulcers like those seen after natural infection by the mite. The skin and lymphoid tissues of man and monkeys were used for examination and Azur 2 was found to be the best stain, showing the minute coccoid bodies in the endothelial cells. These are well demonstrated in the coloured plate.

P. W. B-S.

HAYASHI (N.). Vorläufige Mitteilung ueber die Wirkung des Chemotherapeutikums "Bayer 205" bei der endemischen japanischen Tsutsugamushikrankheit. **[The Action of "Bayer 205" in Japanese River Fever.]**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Feb. Vol. 29. No. 2. pp. 65–67.

Three cases were treated; two recovered and one died. The first case was given 0·5 gm. Bayer 205 intramuscularly, which caused some albuminuria; the second had 0·5, and on the following day 1 gm. The third 3 injections of 0·5 gm.; on the sixth day profuse diarrhoea set in and death occurred on the 13th day.

P. W. B-S.

VERRUGA PERUANA.

MONGE (Carlos M.). Verruga Peruana o Enfermedad de Carrión. **[Peruvian Wart or Carrion's Disease.]**—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 244–252. With 4 figs. on 1 plate. [53 refs.],

This paper contains a general description of Verruga peruana in its grave and mild forms, the condition being regarded as a single entity and not as two diseases, Oroya fever and Verruga peruana. The account of the symptoms and pathological findings, particularly the haematological, is fairly full, but the important section is that in which the author gives his reasons for regarding the two as varieties of one disease. These reasons are: (1) That the geographical distribution is identical; (2) that Bartonella bodies are found in both; (3) that the blood-picture is the same; (4) that when Bartonella bodies are present in the eruptive forms, STRONG's view that the patient is suffering from both diseases is more easily explained by identity than by simultaneous double infection.

H. Harold Scott.

MACKEHENIE (Daniel) & WEISS (Pedro). Contribución al Estudo de la Verruga peruana. **[Study of Peruvian Wart.]**—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 211–220. German summary p. 221. With 2 figs. on 1 plate. [17 refs.]

Verruga peruana has been experimentally conveyed by inoculation to apes, dogs, rabbits, asses, sheep and goats. The authors inoculated two monkeys, species Cebus, with material obtained from a human case, triturated and emulsified in saline. 0·5 cc. was injected into the upper eyelid and in a fortnight nodules appeared having the characters of those found in man. A solution of Isamin blue was then injected into the tissue and the whole subsequently excised, fixed, cut, and stained in various ways. The pathological histology is described with a wealth of detail, corresponding with that given by ROCHA LIMA. The authors maintain, however, that the cells considered to be of two sources of origin, endothelial and the histiocytes or haemohistioblasts of FERRATA (the latter term including the adventitial cells of MARCHAND, the polyblasts of MAXIMOW, RANVIER'S clasmatocytes, SAXER cells, and so on) are primarily of the haemohistioblastic type and secondarily differentiate incompletely to endothelial types. In these cells they saw bodies structurally identical with the Bartonella bodies present in the peripheral blood in cases of Oroya fever.

H. Harold Scott.

DA ROCHA LIMA (H.). Verruga peruviana und teleangiektatische Granulome. [**Peruvian Wart and Telangiectatic Granuloma.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Oct. 15. Vol. 29. No. 10. pp. 525–538. With 9 text figs.

The relationship of the telangiectatic granulomata from other districts to the lesions of " Peruvian wart " is discussed. The photographs of a case from Honduras are presented, and the histological features of the lesions, examined by the writer, are described and figured. The cells of this angioblastic tumour, apparently of an endothelial nature, showed collections of inclusion bodies which might be either cellular granulations or very minute organisms. These resembled very closely the inclusion bodies observed in the lesions of Peruvian wart. They appear inside the cells either arranged in heaps or distributed throughout the entire protoplasm. The conclusion is drawn that the case described is closely related to Peruvian wart, while the epidemiological factors and the incompletely similar structural appearances are against the absolute identity of the two conditions.

W. Jenkins Oliver.

AMOEBIASIS AND DYSENTERY.

AMOEBIASIS.

BOYERS (Luther M.), KOFOID (Charles A.) & SWEZY (Olive). **Chronic Human Amebiasis. A Review of the Diagnosis and Treatment on the Basis of Encystment in the Liver Area.**—*Jl. Amer. Med. Assoc.* 1925. Nov. 7. Vol. 85. No. 19. pp. 1441–1447. With 6 text figs. [3 refs.]

A careful recapitulation of the clinical data of chronic human amoebiasis, with the suggestion that encystment and subsequent excystment in the liver probably occurs in most cases, the parasite having been carried to the liver through the portal veins. A statement was made to the protozoologists that encystment of *Endamoeba dysenteriae* must occur outside the colon, if one is to account rationally for the clinical behaviour of cases. Six months before this paper was written, routine duodenal drainage was instituted, to secure a check on the liver area, and examinations paralleling faecal examinations were made, under the stimulation of bile salts and salines by mouth. Accurate diagnosis of infection with *E. dysenteriae* has improved (1) when identification of the parasite by cytologic criteria of the encysted stage was substituted for the older method of identification by the motile phase, (2) when serial examination of faeces were substituted for haphazard examinations Salines have proved useful in bringing to light amoebic cysts or motile forms. This in turn has given place to an even better method—the routine use of bile salts as a cholagogue. This use of bile salts has proved so effective in making demonstrable obscure infections with amoebae that it has aroused suspicion that large numbers of amoebae may be found commonly in the liver area in chronic amoebiasis, and this led to the authors' observations on the size of the liver, sensitiveness of the liver edge and frequency of accompanying gall-bladder symptoms No faecal or duodenal examination is complete without the use of bile salts with or without a saline.

Light is thrown on failure to eradicate amoebic infection by the authors' results of duodenal drainage. Motile and encysted amoebae were found in the liver area By analogy the question is raised whether or not they may occur also about the joints (hypertrophic arthritis in chronic amoebiasis) and wherever either intestinal or circulatory stream tends to slow down Encystment in protozoa generally is often regarded as a protective measure providing for their resistance to desiccative or other adverse conditions. From this point of view one would not predict encystment in the liver region or elsewhere in the tissues. There is, however, another point of view—viz., that encystment is related to the metabolism of the protozoon. It often occurs among free living protozoa in cultures in which food is abundant and no adverse conditions appear to be present. It is possible that encystment may follow a period of abundant feeding, or that it may be a resultant of the interaction of some factors in the protozoon's life-cycle. There is no satisfactory evidence that sexual reproduction occurs in any amoeba, certainly not in any parasitic in man, or that encystment follows syngamy. There is no sound biologic evidence that encystment is primarily a protective device or that it might not occur in the case of *E. dysenteriae* in loci, in the human host, other than the lumen of the colon.

The authors carried out 120 duodenal drainages on 50 patients. These patients, with two exceptions, had a clinical diagnosis of pathogenic amoebiasis confirmed by laboratory diagnosis. They were, mostly, selected for duodenal drainage because each one had shown some refractory feature during or after specific therapy. Eleven of the fifty showed *E. dysenteriae* motile or encysted, or both, in the duodenal drainage. In one case duodenal drainage showed amoebae while none were found in six stools examined serially. Three types of amoebae were found in the detritus of duodenal drainage: (1) motile, (2) encysted, and (3) moribund amoebae. Motile amoebae have been preserved with pseudopodia still extended with ingested leucocytes and erythrocytes in their cytoplasm, and with bacteria in vacuoles—evidences indicative of a normal motile feeding phase in the region from which the duodenal drainage was derived. Cysts in the one, two and four nucleated stages have been found; those with one nucleus most often.

> "The evidence for concluding that the amoebas of the duodenal drainage are derived from the liver area is as follows: (1) The clinical signs in the hepatic area; (2) the coincidence of regression with amebas in the duodenal content, following treatment; (3) the inclusion of amebas together with typical gall-bladder débris in mucous strands, (4) the increased facility in finding amebas in stools following the administration of bile salts, and (5) the absence of any evidence from clinical examination or necropsy of infection of the jejunum or ileum, above its lowermost part, by *Endameba dysenteriae* Amebic hepatitis may, therefore, be hematogenous in origin and attend many, perhaps all, cases of chronic amebiasis."

The authors' therapy consists in the administration of emetine hydrochloride, and emetine periodide or bismuth emetine iodide, together with neoarsphenamin or stovarsol. They also used bismuth subnitrate and an organic iodine preparation (iodo-oxybenzenepyridin sulphonate). Combinations of the above drugs were used because each had been tested singly and the results obtained proved inferior to those which followed from their combined use.

[An abstract does poor justice to a valuable paper which should be read by all those engaged in the diagnosis and treatment of amoebiasis; the authors promise a further paper dealing with their therapeutic methods.]

H. M. Hanschell.

BRUG (S. L.). Zur Epidemiologie der Amöbendysenterie. [**Epidemiology of Amoebic Dysentery.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 26–31. With 6 curves in text.

Various workers have shown that in England, Holland, and United States of America, five to ten per cent. of the inhabitants are carriers of *E. histolytica*. In these countries autochthonous amoebic dysentery is rare. Why does infection with the dysentery amoeba lead to dysentery so seldom in temperate and so often in tropical climates? Difference in species of parasite is improbable [*ante* p. 35]. There are no morphological differences to be detected between the tropical and temperate clime forms, and the latter can cause dysentery and liver abscess as well as, if less often than, the former. There are no differences between the clinical symptoms and pathological anatomy of the lesions in both climates. Moreover, in the tropics one finds autochthonous cyst carriers who show no ill effects from their *E histolytica* infection. As to the "virulence" of the tropical *E histolytica*, "virulence" depends on the host as well as on the parasite. If it be that a tropical climate enhances the virulence of *E histolytica*, it can do so only indirectly through its influence on the host, and in that case this effect of climate should be discernible also in temperate lands. The amoebic dysentery of the temperate zone should be a disease of the hot months. The author has searched the literature for epidemiological data of amoebic dysentery in temperate and subtropical countries. These records, though few, are significant.

JAEGER observed two amoebic dysentery epidemics in the Konigsberg garrison August-October 1900, and August-September 1901. The author gives curves of the incidence of amoebic dysentery cases in 1900–01 in the E Asiatic Expeditionary Corps, of the cases observed by VIERECK in Hamburg (1900–05), WOODCOCK (1917), Suez Canal, JOUVEAU-DUBREUIL, Szechuan (1919), LEDINGHAM, Mesopotamia (1917–18), these all show amoebic dysentery to occur mainly in the hotter months. VAILLARDI (1917), Macedonia, found amoebic dysentery most frequent in July. GARIN and LEPINE reported most cases in Lyons occurred in June, July and September and October. SCOTT recorded that in Tientsin new cases of amoebic dysentery were seldom found in winter. For comparison the author gives a curve of amoebic dysentery incidence in tropical Batavia 1917–24. This shows the great majority of cases occur in August, October and November. The author concludes that climate is the factor that converts a healthy amoeba carrier into a dysentery case and "climate" is the answer to the question why in cold countries amoeba carriers are common while amoebic dysentery is rare.

H. M. H.

BENTMANN (E.). Die Bedeutung der Dauerformen im Krankheitsbilde der Amobenruhr. [**The Significance of Permanent Forms in the Clinical Picture of Amoebic Dysentery.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 17–26. [10 refs.]

The result of treatment in amoebic dysentery can be judged only by stool examination continued, in the author's opinion, for one year after which the stools should be cyst free. Treatment by emetine and yatren leads to conversion of parasites from the vegetative or active to the encysted state, the formation of active forms ceases. The older vegetative forms, the *minuta* and chromidial forms and cysts play no part in the disease process and therefore are not the objects of treatment. The further development of the treatment of chronic amoebic dysentery must come through pharmacological investigation of the effect of emetine and yatren on tissue regeneration.

H. M. H.

EVANS (Thomas Carey). **The Surgical Aspect of Amoebiasis.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Nov. 19 & Dec. 17. Vol. 19. Nos. 5 & 6. pp. 282–299.

This paper deals fully with the complications and sequelae of amoebiasis that call for surgical treatment. Amoebic typhlitis must be differentiated from acute or subacute appendicitis, by the history of the case and stool examination It needs conservative treatment only; emetine cases do not stand operation well Localized chronic infections and thickenings of the large intestine may occur causing symptoms of partial obstruction If emetine prove ineffective operation is indicated Chronic ulcerative colitis lasting over two or three months, with anaemia and emaciation, which does not respond to medical treatment, should have frequent lavage of the large bowel through an appendicostomy or valvular caecostomy Stricture of bowel after amoebic ulceration is rare It is possible that cicatrization or contraction of the colon not amounting to actual stricture may often be the cause of the bowel derangements following upon amoebic dysentery Only two cases of successful suture of a perforated dysenteric ulcer have been reported Severe intestinal haemorrhage which may be mistaken for duodenal ulcer, may occur, examination of the stools will settle the diagnosis, if amoebae are found emetine treatment only is required After amoebic dysentery the sigmoid or the descending colon, may frequently be palpated as a thin cord or as a hard contracted tube This may be due to spasm or to fibrosis and may lead up to definite diverticulitis Diverticulitis and sacculation of the large bowel are difficult and intractable ' surgical sequelae of dysentery Perinephric abscess may result from chronic amoebic dysentery

Amoebic abscess of the liver is by far the most important sequela of amoebic infection of the gut it is a preventable condition and its incidence since the discovery of emetine has diminished considerably—a debt that humanity owes to Sir Leonard ROGERS The author stresses the importance for all those likely to meet with amoebic infections, of interesting themselves in acute amoebic hepatitis which, if unrecognized and untreated invariably leads up to abscess formation Were this liver condition more efficiently recognized the necessity for surgical procedure would be entirely abolished When liver abscess has developed and been diagnosed, preliminary treatment with emetine is essential in all cases Definite indications for surgical interference are —

1 Swelling over the liver area
2 Oedema with pitting on pressure
3 Progressive enlargement of liver increased pain and tenderness
4 Progressive deterioration in patient s general condition
5 Blood examination showing a polymorphonuclear leucocytosis (In chronic liver abscess there may be little or no leucocytosis)
6 Screen examination showing definite shadow and possibly right diaphragm at higher level than left with diminution of movement
7 When pus is actually obtained on exploratory puncture

The more experience one obtains of liver abscess, the more convinced one becomes that the majority can be dealt with satisfactorily by simple aspiration But, with a condition so varied in symptoms and pathology, a fair degree of latitude is essential in deciding the best procedure in each instance The surgeon should remember that 80 per cent are single abscesses, occurring in the proportion of 5 to 1 in the right lobe of the liver. Exploratory puncture and aspiration is practically limited to abscesses of the right lobe CANTLIE and MANSON laid down the golden rule that needle or trocar should not be pushed in more than 3½ inches In every case of effusion or pus in the right chest, the possibility of its connexion with liver abscess should be kept in mind. Amoebic abscess of spleen is rare · repeated aspiration is the method of choice in dealing with it. Amoebic abscess of brain never occurs apart from liver abscess. Apart from direct extension from the liver amoebic abscess of the kidney has not been recorded. The author has never met with a case of amoebiasis of the genito-urinary system, though such cases have been recorded. [This abstract indicates only some of the points dealt with in a masterly paper, which will well repay reading by all engaged in tropical medicine.]

H. M. H.

VICHREV (P.). Ueber Amöbenruhr. [**Amoebic Dysentery.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 404–420.

An account of the etiology, macro- and micro-scopic morbid anatomy, symptomatology, complications, epidemiology, diagnosis and differential diagnosis of amoebic dysentery as observed by the author in Tiflis. Under differential diagnosis the author notes the frequency of *Amoeba coli* (Loesch). It is non-pathogenic. He has found infection of vagina and bladder with *Amoeba urogenitalis*, whose characteristic movement and "lobopodia" distinguish it from *Amoeba histolytica*. Bacillary dysentery also must be excluded.

H. M. H.

ALESSANDRINI (Paolo). Criteri elementari per la diagnosi della dissenteria amebica. [**Diagnosis of Amoebic Dysentery.**]—*Policlinico.* Sez. Prat. 1925. Nov. 30. Vol. 32. No 48. pp. 1665–1668.

In this article the author lays stress on the facts, firstly that liver abscess due to *E. histolytica* may arise without any preceding intestinal symptoms, and secondly that it is not safe to argue that the clearing up of symptoms after administration of emetine proves the condition to have been due to *E. histolytica.* Cases with dysenteric symptoms from causes other than the entamoeba may get well, while, on the other hand, there are cases of amoebic dysentery which prove emetine-resistant. It is necessary, for diagnosis, to examine stained smears as well as fresh, and in doubtful cases it is advantageous to obtain intestinal mucus viâ the sigmoidoscope. The remainder of the paper is taken up with descriptions of *E. histolytica*, *E. coli*, *E. nana*, *Iodamoeba* and *Dientamoeba fragilis.*

H. Harold Scott.

BACH (Fritz Werner). Ueber das Vorkommen von Amöbenruhr im Rheinlande. [**The Occurrence of Amoebic Dysentery in the Rhine Country.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 1–9. [37 refs.]

The author describes the discovery and course of amoebic dysentery in the Rhineland. FISCHER recorded cases in Göttingen in 1920, one of them a true autochthonous case without contact with amoebic dysentery cases. Since then other autochthonous cases have been from time to time recorded. The author points out that in the Rhineland (when his paper was written) the inhabitants have among them the black and brown sons of Africa, so that a knowledge of tropical pathology has a local practical significance.

H. M. H.

RUSSELL (Martha N.). **A Case of Amoebic Dysentery contracted in England.**—*Lancet.* 1926. Jan. 30. p. 229.

A woman, aet. 38, had suffered for 3 years from diarrhoea with blood and mucus in stools. She had never been out of England, and none of her associates had suffered from the same complaint. On admission to hospital she was having 6 stools in 24 hours, chiefly mucus and blood, with very little faecal matter. Microscopic examination revealed large numbers of vegetative and encysted *E. histolytica.* The condition completely cleared up under emetine treatment.

H. M. H.

PETZETAKIS (M.). Amöbenerkrankungen der Harnwege und Amöbenzystitis. [**Amoebic Infections of the Urinary Passages and Bladder.**]—*Wien. Klin. Woch.* 1925. Dec. 3. Vol. 38. No. 49. pp. 1310–1311.

The author claims to have been the first to describe acute and chronic amoebic infection of the air passages. He has also cured by emetine a case of amoebic nephritis—reported in 1923. He has further noted cases of amoebic infection of the urinary passages; and in this paper describes and discusses fully two new cases of such infection.

Case I. No previous dysentery. The patient, a male aet. 35 years, suffered from haematuria, with painful and very frequent micturition. In the urine the author found motile, red-cell-ingesting amoebae. No amoebae found in the stools. Emetine was given intravenously and intramuscularly. The urine became clear, frequency ceased, and amoebae disappeared.

Case II. Male aet. 60 years—bloody slimy stools and painful, frequent, bloody urine. Both stool and urine revealed haematophagous amoebae. After emetine treatment these vanished from both stool and urine.

The author notes that FRANCHINI has reported amoebic cystitis occurring in the course of amoebic dysentery. He himself has found amoebic cysts, with two, three and four nuclei, in the urine. He describes the morphology and staining character of these amoebae; they are identical with *E. histolytica,* and he urges that in amoebic dysentery the urine and sputum must be disinfected as well as the stools.

H. M. H.

FRANCHINI (Giuseppe). Casi di cistite amebica. [**Cases of Amoebic Cystitis.**]—*Pathologica.* 1925. Oct. 15. Vol. 17. No. 406. pp. 550–552. [1 ref.]

The author places on record three more cases of urinary amoebiasis occurring in Bologna, thus bringing the total up to five. All three were women, two aged 22 and one 23 years. There was in each a complaint of suprapubic pain with passage of urine containing blood and motile amoebae with included red corpuscles. Cysts also were found in one patient. Treatment with emetine hypodermically and intravenously was adopted, together with local lavage with antiseptics or stovarsol. Urinary amoebiasis was found to be more resistant to treatment than the intestinal form.

H. Harold Scott.

FIORITO (G.). Un caso di cistite da ameba hystolitica. [**A Case of Cystitis due to** *E. histolytica.*]—*Riforma Med.* 1926. Feb. 15. Vol. 42. No. 7. pp. 163–164. [23 refs.]

The author places on record the case of a woman, 41 years of age, who had suffered from amoebic dysentery for about three years. During the last year she showed symptoms of cystitis—frequency of micturition, strangury and pyuria. Examination of the urine by Giusti's method revealed the presence of typical *E. histolytica*, both motile and cystic. He thinks that the intestinal ulceration had favoured the passage of the amoebae to the urinary system by the lymphatic route.

H. Harold Scott.

LINDALL (A. L.). **Liver Abscess. Report of Five Cases.**—*U.S. Nav. Med. Bull.* 1925. Dec. Vol. 23. No. 6. pp. 494–501. With 1 text fig. [3 refs.]

The author gives a full and careful account of his cases.

Diagnosis chiefly depends upon the X-ray findings and the ability to locate flocculent or brick-red pus in the liver with the aspirating needle. The main cause of the high mortality of amoebic liver abscess is due not to the virulence of *E. histolytica* but to procrastination in using the aspirating needle and delayed surgical interference. He quotes JOHNSTON (Ann. Surg. 1897): "Treatment should be prompt, bold, and radical; no measure will succeed which does not completely evacuate the abscess cavity and allow free drainage. This can be done with precision and safety only by incision." The author describes the technique of the retroperitoneal method of draining a liver abscess —by subperiosteal resection of the entire twelfth rib. He claims as one of its very evident advantages that the operation can readily be performed under local anaesthesia. The resected twelfth rib is functionless and the wound passes through soft tissues, thus reducing shock, facilitating drainage, shortening convalescence, and leaving no permanent disability or impairment. The aspirating needle can be used to great advantage in exploring the liver, and above and below the liver and the perinephritic area. The transparent peritoneum, too, permits inspection of the condition of the upper abdominal cavity. Retroperitoneal and retrocaecal abscess, and empyema, if found, can all be dealt with by this route. The cases were treated with emetine hydrochloride.

H. M. H.

RAMIREZ-CORRIA (C. M.). Le tissu connectif dans l'hépatite amibienne aiguë. [**The Connective Tissue in Acute Amoebic Hepatitis.**]—*C.R. Soc. Biol.* 1926. Jan. 5. Vol. 93. No. 38. pp. 1641–1642.

A detailed histological study and description of the pale firm nodules in the liver of acute amoebic hepatitis (ROGERS' fulminating abscesses). The report, which is necessarily a cataloguing of varieties of cellular morphology and staining reactions, cannot be well abstracted.

H. M. H.

D'AMATO (H. J) & ORTUÑO GONZÁLEZ (J) Una forma poco común de absceso hepático amebiano [**A Rare Form of Amoebic Abscess of the Liver.**]—*An Inst Modelo Clín Méd* Buenos Aires 1924–25 Vol 9 No 1 pp 279–290 [18 refs]

The authors record a case of hepatic abscess without rise in temperature or definite increase in polymorphonuclear cells, but with a rapidly progressing anaemia Amoebae were not found either in the pus or discharges at or after operation, nor on faecal examination, but the condition is regarded as amoebic because of the results of emetine administration There was no history of dysenteric attack The liver was enlarged to 5 fingers-breadths below the costal margin and the abscess situated towards the upper part of the right lobe At the first blood examination erythrocytes numbered 3,680,000, and leucocytes 14,200 per cmm , a fortnight later the figures were 2 680 000 and 9,600 respectively, and the polymorphonuclears are stated to have been 66 per cent in the first count, 59 per cent in the second The anaemia progressed to such a degree that two blood-tranfusions were performed at 3 days' interval, after which the abscess was opened and drained The questions of the origin of the abscess and the cause of the anaemia are discussed and the authors conclude that in subjects of hereditary syphilis an acute exacerbation of an amoebic hepatitis can arise but that general intoxication need not accompany the condition and therefore there may be no rise of temperature nor any increase of the polynuclear cells [These conclusions are not quite clear from the account as given , for, first a count of 14,200 with 66 per cent polynuclear cells would constitute a polynucleosis , secondly since the differential enumeration from the figures stated amounts only to 86 in all not 100 there must be some error either in the count or the transcription , thirdly, though stress is laid, in the conclusions, on the luetic element it is stated earlier that the Wassermann reaction was negative but this was disregarded as other signs were present]

H Harold Scott

D'AMATO (H J) Hematología de la hepatitis amebiana supurada. (Contribucion a su estudio) [**The Blood in Amoebic Liver Abscess.**]—*Semana Medica* 1925 Nov 12 Vol 32 No 46. (1661) pp 1233–1236

As a result of 55 blood-examinations carried out on 30 cases of amoebic abscess of the liver the author shows that, apart from the bare diagnosis that a suppurative condition probably exists, there are no reliable changes indicative of the amoebic nature of the abscess In the list given, the red cells varied between a little under 2 million and a little over 5 million per cmm , the leucocytes between 7,000 and 38,000; haemoglobin between 50 and 90 per cent , the polymorphonuclears between 55 and 91 per cent , and so on Speaking generally, there is in most cases some degree of anaemia of the hypochromic type, and a leucocytosis with a relative polymorph increase

H Harold Scott.

ARLAND (J. P) **Observations on a Fatal Case of Liver Abscess.**—*Indian Med Gaz.* 1925 Nov. Vol 60. No 11. pp. 531–532.

The patient gave a history of 10 years' alcoholism He had had dysentery twice A tumour was present below the right costal arch. Aspiration confirmed the diagnosis of liver abscess During operation breathing ceased

Post-mortem —Heart and lungs were empty of blood Intestines deeply congested The greater part of liver, two-thirds of which had been destroyed, was represented by a thin capsule enclosing cellular débris. Destruction of the major portion of the liver is compatible with life.

A marked feature of the case was the early onset of intravascular thrombosis throughout the body The emptiness of heart and lungs may be explained " by the great suction action exercised by the inferior vena cava when it was relieved of the great pressure of the abscess pressing upon it " Stitching liver to abdominal wall to shut off peritoneal cavity is not a safe procedure where the abscess is large and its tissue friable. In aspiration, that part of the needle traversing the abdominal wall is for practical purposes a fixed point, while the part in the friable liver and abscess cavity is not so fixed. With these facts in mind, consider the effect on the liver of respiratory movements The liver moves up and down during respiration ; this motion causes the mobile portion of the needle to tear through the liver and thus favours peritoneal extravasation.

H. M. H.

PANAYOTATOU (A.) Abcès amibien extrapéritonéal simulant l'appendicite (opération, guérison). [**Extraperitoneal Amoebic Abscess simulating Appendicitis.**]—*Bull Soc. Path. Exot.* 1925. Nov. 11. Vol. 18. No. 9. pp. 704–707. [2 refs]

The author remarks that the cases of amoebic abscess hitherto published have been those of involvement of an organ with alteration of its structure (liver, lung, brain, spleen, etc.), or localization in glands. DOPTER reported a case of amoebic adenolymphitis ; and the author herself a case of amoebae in a glandular mass in the groin, and a case of amoebic mastitis (abscess) STRONG's cases (12 autopsies) were cases of purulent appendicitis, rupturing into peritoneum ; and MORRISON and CRENDIROPOULO's case was an abscess in the perinephric tissue. The author describes a case of perityphlic extraperitoneal abscess, clinically resembling acute appendicitis (with fluctuation), and necessitating surgical intervention. The patient, a male Greek, aet. 40 years, Alexandrian, had suffered from amoebic dysentery 10 years previously ; apparent cure by emetine injections, but some mild dysenteriform relapses since, always checked by emetine injections. At operation, on opening abdomen, pus was found in right iliac fossa, but the appendix was entirely normal. The pus contained characteristic *E. histolytica* ; the patient's faeces showed *E. histolytica* cysts and dead amoebae. It is notable that in this case, that of perinephric abscess (MORRISSON and CRENDIROPOULO), and the breast abscess (author's), the pus was entirely free of any organism but amoebae. The author believes that encysted amoebae latent in the intestine may from time to time give rise to new amoebae : these may traverse the intestinal coats and become lodged extraperitoneally.

H. M. H.

FIESSINGER (Noël) & PARTURIER (Gaston). Hémoglobinurie orthostatique. Ictère hémolytique. Amibiase urinaire. Cure émétinienne. Guérison. [**Orthostatic Haemoglobinuria. Haemolytic Icterus. Urinary Amoebiasis.**]—*Bull. et Mém. Soc Méd. Hôpit. de Paris.* 1926. Feb. 4. Year 42. 3rd Ser. Vol. 50. No. 4. pp. 153–158. [7 refs.]

By way of introduction to their full account, clinical and pathological, of this case, the authors note that amoebiasis of the urinary system has been known for a long time. It has been described by POSNER (1893) and BAELZ. There are numerous observations on this matter by KARTULIS, JURGENS and WIGNOFF. KOSTER (1918) collected 14 cases. BARTLETT (1917) found them to be common. ARAVANTINOS and MICHAELIDES (1919) described two cases of amoebic cystitis. Finally PETZETAKIS (1923) described *E. histolytica* in urine of cases of cystitis without or with haematuria and/or urethritis. PEYROT (1924) recorded at Marseilles three cases of amoebic nephritis without any intestinal or pulmonary infection. SIMONIN (1914) recorded a case which, following on dysentery contracted in Morocco, developed multiple independent abscesses of liver and lung, and exhibited haemoglobinuria with high irregular fever for three days. The author's case is different from SIMONIN'S. It is a case of orthostatic haemoglobinuria, without any signs of an acute infection, the amoebic nature of which was discovered by accident, in the course of examinations of the urine.

The patient (a male aet. 25 years) suffered from a haemoglobinuria provoked by the erect posture and walking, and ceasing on resting or lying down. No haemolysis could be detected in the circulating blood. The icterus at the haemoglobinuric attacks was without cholaemia and without choluria There was liver and spleen enlargement The haemolysis occurred in the renal parenchyma The author thinks, however, that the parasitic cause of the haemolysis may have been as much in spleen or liver as in kidney. He concludes that the cause of these attacks of haemoglobinuria was amoebic infection Amoebae were found in the urine They were plainly *E histolytica*, and emetine in causing disappearance of the amoebae stopped the haemoglobinuria, and at the same time the icterus and the enlargement of spleen vanished Probably the amoebae gained entrance via the intestine, though a history of passing enteritis is the only evidence for this. An amoebic septicaemia resulted.

H. M. H.

HAMMERSCHMIDT (Johann). Ueber zufällige Amöbenfunde in der Darmschleimhaut des Menschen. [**The Casual Discovery of Amoebae in the Intestinal Mucous Membrane.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 148–151. With 4 figs. on 2 plates. [3 refs.]

The author, in 1919, reported finding an amoeba in the rectal mucous membrane of a fatal case of pernicious anaemia. He now records briefly, and illustrates by microphotographs, the finding of amoebae deep in the mucous membrane of the ileum, in two fatal cases of typhoid fever, and in a fatal case of acute leukaemia. The morphological characters of these amoebae, as illustrated in the photographs and described by the author, support his claim that they are *E. coli.* He concludes that *E. coli*, hitherto regarded as only a saprophyte and non-pathogenic, may play a new rôle. If found in the stool of an actual dysentery case it may have some valid etiology for that illness.

H. M. H.

ABELHEIM (A. C.). **A Case of a Liver Abscess cured by Injections [of] Emetine.**—*Med. Jl. S. Africa.* 1925. Nov. Vol. 21. No. 4. pp. 102–104. With 1 fig.

In March 1914 the patient suffered from dysentery for four weeks. The use of antiseptic enemas was followed by apparent improvement, but diarrhoea from time to time led to the patient's appendix being removed by another medical man. Some improvement followed. In September, 1915, the patient suffered from fever with loose slimy stools and pain in right shoulder, crepitations at right base and some enlargement and tenderness of liver were found X-rays showed liver enlargement. The author aspirated the liver in many places, but got no pus Emetine, ½ gr, was given twice daily for 12 days, and patient made an apparent recovery Three months later the patient having rejected the author's advice to undergo a further course of emetine injections had a return of the symptoms Some other medical man diagnosed gallstones and opened the abdomen, nothing wrong was found in abdomen or with gall bladder The author again treated the patient with emetine ½ gr for 12 days and recovery followed Since then several slight attacks of diarrhoea with hepatic region discomfort have been treated with emetine injections and E B I by mouth After the last attack patient was X-rayed The plate revealed a round shadow 2 inches in diameter, in right lobe of liver Evidently the abscess had become sterile and calcified The case thinks the author teaches that liver abscess can be cured by emetine injections alone, but these must be repeated at least once, within three months [The proof of calcification is weak]

H M H

HODSON (V. S) **Emetine in the Treatment of Hepatic Abscess.** [Correspondence]—*Lancet* 1926 Jan 16 p. 156

Dr Hodson compares and contrasts statements made by Dr MANSON-BAHR in this *Bulletin* and recently in a paper published by MANSON-BAHR and MORRIS with regard to the rôle played by emetine in the treatment of liver abscess [See this *Bulletin*, Vol 22, pp 5 and 266 Interested persons may consult these passages and form their own conclusions One extract quoted as MANSON-BAHR's is really FRY's]

A. G. B.

JOHNS (F M) & JAMISON (S Chaille) **A Note on the Treatment of Amoebic Dysentery with Stovarsol.**—*Jl Trop Med & Hyg* 1925 Nov 2 Vol 28 No 21 pp 378–379 [6 refs]

A preliminary report on 27 cases of amoebic dysentery—published now because their present results of stovarsol treatment are claimed by the authors to be remarkable The illnesses ranged in severity from chronic, to active, severe, emaciated cases, from a few weeks' to 25 years' duration Diagnosis was confirmed in all cases by finding entamoebae in stools, or in scrapings obtained through the proctoscope, and always verified by use of wet fixed preparations and by iron-alum-haematoxylin staining of nuclear structure Except for one patient who received less, doses of 0·25 gm t i d for one week caused complete subsidence of symptoms, improvement beginning usually on third or fourth day of treatment After one course, three cases had remained well, and free from entamoebae, 99, 74, and 70 days respectively.

Twenty-four cases received a second course, 7 to 10 days after the first, consisting of three 0·25 gm tablets per day for seven days, or two tablets for twelve or fourteen days Twenty of these cases had been followed with clinical, proctoscopic and microscopic examination for an average period of 55 days after end of treatment. Sixteen had remained well and free from entamoebae Four relapsed, three clinically and one developing cysts. The authors point out that long-standing cases with massive involvement of the bowel walls present the same difficulty of treatment that applies in other tissue-invading parasitic diseases, the parasites being protected by impermeable walls of exudate and tissue proliferation. No known specific will cure in all instances.

Stovarsol is an arsenical designed by LEVADITI and NAVARRO, to be administered through the digestive tract; it has been the subject of considerable European investigation in the treatment of syphilis. It is partly absorbed through the small intestine, and then excreted through the large. The only untoward effect attributed to it, noticed by the authors, was, dull headache in one case, mild rash in another, and rash with slight temperature in a third. Their experience, so far, indicates that stovarsol is a remedy for amoebic dysentery comparing quite favourably with anything previously employed. Also it is supposedly harmless. [The reviewer would point to the two cases of mild rash and add that stovarsol may produce very severe arsenical exfoliative dermatitis.]

H. M. H.

VAN DEN BRANDEN (F.). Sur quelques cas de dysenterie amibienne traités par le stovarsol. **[Cases of Amoebic Dysentery treated by Stovarsol.]**—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 109–110. [3 refs.]

Stovarsol was given to 8 cases of amoebic dysentery. Two cases relapsed a few days after the finish of treatment and in four cases the amoebae did not disappear from the stools. One of these four was from the start of stovarsol treatment a very severe case with great cachexia, and the other three were "amoeba carriers" very resistant to emetine hydrochloride treatment. In two cases amoebae and symptoms disappeared. The author notes that these results are less brilliant than those reported by MARCHOUX, who introduced stovarsol treatment for amoebiasis, and others. He thinks it may be best to combine stovarsol and emetine treatment.

H. M. H.

RODENWALDT (Ernst). Die Behandlung der Amöbendysenterie mit Yatren 105. **[Treatment of Amoebic Dysentery with Yatren.]**—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 475–484.

In the past critical judgment of therapeutic remedies for dysentery in the tropics has been handicapped by uncertainty of diagnosis. Even to-day the diagnosis of amoebic dysentery is not everywhere assured and the frequency of bacillary dysentery in the tropics not always recognized. The vegetative forms of the dysentery amoeba are often confused with *Amoeba coli*, and if cysts be absent from the stools, the effect of the therapy cannot with certainty be known. The author refers to the introduction of yatren treatment by MUHLENS and MENK, and gives an account of his uniformly satisfactory experience of this remedy in amoebic infections of the gut. Doses of 1 gm., powder, wafer or pill, t.i.d. are borne well by the patient. In severe cases, or in relapses, 9 gm. per diem, per os, can be given. With rare exceptions, yatren masters the attack of dysentery. It is especially in old obstinate cases that yatren procures full recovery, where other remedies had failed. Cysts disappeared in 4 days. There were no relapses. Yatren has apparently no effect on intestinal flagellates, nor on the numbers of helminth ova seen in the stools; its actual effect on the amoeba is not yet clear. It is desirable when yatren is used in amoebic dysentery, that at the same time the quality and numbers of the intestinal flora be investigated. Where amoebae are present, and there is tissue invasion, it may be that they live in symbiosis with the intestinal bacteria. Such an investigation might throw light on the different courses run by amoebic dysentery cases, and on the results of therapeutic interference in different climates. The author records that TAFEL (S.E. Borneo) had cured three cases of Balantidium infection by yatren. This drug has not long been used in tropical practice, yet already from all countries come reports of yatren cures of severe, one year to ten-year-old, cases.

H. M. H.

KATSURADA (F.). **On the Works of "Yatren" against Amoebic Dysentery. (Preliminary Report.)**—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 178–179.

As introduction the author states that with emetine a permanent cure of amoebic dysentery is not obtained. Emetine induces cyst formation in the amoebae, which become strongly resistant to physical and chemical agents. His experience with yatren had been very satisfactory, amoebae disappearing and not reappearing after, as a rule, 1·8 gm. yatren per diem, for seven days, and sometimes after two or three 0·6 gm. doses of yatren. Further observations on the effect of this drug are proceeding.

H. M. H.

LANTIN (Pedro T.). **Neosalvarsan in the Treatment of Amoebic Dysentery.**—*Jl. Philippine Islands Med. Assoc.* 1925. Sept. Vol. 5. No. 9. pp. 269–275.

A report of 11 cases of dysentery, of 5 months to 12 years duration, whose symptoms and entamoebae disappeared after 1 to 4 intravenous injections of 0·3 to 0·6 gm. neosalvarsan (one case received the drug per rectum). 8 of the 11 had had emetine treatment, in many cases in prolonged courses. Relapses, clinical and parasitic, had occurred in all. In one case there was persistence of symptoms, and cysts and trophozoites in stools, after the neosalvarsan injections. In four cases symptoms and parasites reappeared in from 1 to 19 months after the neosalvarsan injections. The others had all kept well and parasite free. [In some of the cases cysts only are recorded as having been found before the neosalvarsan injections. No apparent steps were taken to exclude syphilis in any.]

H. M. H.

i. HIRAYAMA (Kinzo). **[Yatren Treatment of Amebic Dysentery.]**—*Nihon Fujinkagakkai Zasshi* (*Jl. Japan Gynecol. Soc.*). 1925. May. Vol. 24. No. 3. [Summarized in *Japan Med. World.* 1925. Dec. 15. Vol. 5. No. 12. p. 365.]

ii. MURADOWA (A. B.). **A Case of Lung Abscess of Amoebic Origin.**—*Russian Jl. Trop. Med.* Moscow. 1925. No. 1–2–3. English summary p. 74. [In Russian p. 69.]

i. The author reported 13 cases of amoebic dysentery treated with yatren and concluded that it was indeed one of the most reliable drugs against this disease.

ii. A brief description of a case in Erivan, Armenia, with *E. histolytica* in the sputum. The patient had had dysentery 3 years previously. [The abstract does not give the data on which the recognition of *E. histolytica* was founded.]

H. M. H.

BACILLARY DYSENTERY.

VAZQUEZ-COLET (Ana). **Contribution to the Question of Dysentery Carriers in the Philippine Islands.**—*Philippine Jl. Sci.* 1925. Oct. Vol. 28. No. 2. pp. 173–192. [18 refs.]

The author is to be congratulated on a careful and valuable investigation.

1. The existence of healthy carriers of *B. dysenteriae* in the Philippine Islands has been demonstrated.
2. The proof was carried out by isolation of cultures which, according to standard methods of identification, proved to be *B. dysenteriae.*
3. In 3,328 examinations, 14 carriers were found, of whom 7 harboured the Shiga type, 6 the Flexner, and 1 both Flexner and Shiga types successively.
4. Agglutination tests were performed with the carriers' sera and with the corresponding culture isolated from the carriers, as well as with stock cultures of the Shiga and Flexner types. Usually the serum of the carrier agglutinated its own strain to a lesser degree than the stock cultures, and at times a considerable inhibition zone was noticed with the carriers' serum and its own strain.
5. All of the cultures belonging to the Shiga type, isolated from the carriers, were pathogenic for white mice, and some of them were strongly toxic to rabbits. The cultures belonging to the Flexner type, isolated from carriers, were found to be of low virulence.

The author states that the nature of dysentery carriers is not well established. It is unlikely that the gall passages are invaded at all by *B. dysenteriae.* Chronic inflammation and eventually ulceration of the large intestine would seem to offer a more plausible explanation for the persistence of the carrier state in bacillary dysentery; the histories and serological evidence in the 10 cases here discussed lend support to this supposition. A study of the distribution of *B. dysenteriae* throughout the intestinal tract of dysentery cases is necessary before a definite idea can be formed as to the organ or organs responsible for the state of dysentery carriers. Systematic bacteriological examination at autopsies would probably throw much light on this subject.

The occurrence of the carriers from April (2 carriers) to May (3), to July (6), to August (2), to September (1 carrier), corresponds well with the annual seasonal outbreaks of bacillary dysentery in the Philippines. The number of carriers appears to increase parallel with the number of cases. The opinion expressed on another occasion (1924) "That . . . the chronic carrier is not as serious a factor in the epidemiology of . . . dysentery as he has previously been considered to be," must be corrected. Once the existence of healthy carriers of *B. dysenteriae* has been demonstrated by laboratory evidence in a relatively high percentage of the food handlers examined, the dysentery carrier must be considered as a serious factor in the epidemiology of bacillary dysentery, even though he remain undiscovered.

[The author's doubt as to infection of the gall passages with *B. dysenteriae*, and his plea for systematic bacteriological examination at autopsies, receive resolution and backing respectively by Drs. A. CONNAL and E. C. SMITH's findings in the Nigerian case of bacillary dysentery. (See below.)]

H. M. H.

BOASE (A. J.). **A Review of a Recent Epidemic of Bacillary Dysentery with Special Reference to a New Therapy.**—*Kenya Med. Jl.* 1925. Dec. Vol. 2. No. 9. pp. 245–250.

Drs. T. B. WELCH and C. J. MASCARENHAS reported in 1924 that castor oil had greater efficacy in the treatment of bacillary dysentery than the usual saline aperient treatment [this *Bulletin*, Vol. 22, p. 20]. They claimed that so long as the stools showed signs of active dysentery, castor oil in repeated small doses had the following advantages: (1) A greatly reduced death rate; (2) curtailment of duration of symptoms; relapses unusual and mild; (3) prompt convalescence, patients losing little in condition; (4) alleviation of abdominal pain, defaecation not exhausting, and daily number of stools not very large.

The series of dysentery cases here reviewed were divided into two groups.

A. Saline group —Mag. sulph. 2 drachms every two hours, or twice a day, according to symptoms.

B. Castor oil group. On admission the patient was given 2 ounces of castor oil and on subsequent days 1 drachm hourly for 8 doses until such day (usually the third) as the stools ceased to show blood and mucus. A saline purge was then given to relieve any constipating effect of the castor oil.

	Saline group.	Castor oil group.
Cases treated .	45	72
Deaths	4 (8·8 per cent)	2 (2·77 per cent.)
Relapses ...	9 (20 per cent.)	8 (11·11 per cent.)

The author notes that the number of cases treated was very small; yet, taking the epidemic as a whole, better results were obtained from the castor oil treatment. It has been proved experimentally that the bowel lesions in bacillary dysentery are the result of the bacterial toxins which show a selective preference for the large intestine and the last few inches of the ileum. As a biliary fistula will prevent development of pathological changes in the intestine, the toxins must reach the intestine in the bile. WELCH and MASCARENHAS were led to conclude that retention in the small intestine, if at all prolonged, was a most important factor in the production of intoxication. They found that the death rate among patients on saline treatment rose with the giving of a larger diet, while the small amount, or entire absence for some time, of faecal matter in the patient's stools became even more striking than ever. As a result of this observation, castor oil was exhibited with the special object of preventing delay alike in the small and large intestine. The oil administered in repeated small doses keeps up continuous gentle peristaltic action and the contents of the small intestine are hurried on before appreciable absorption can take place. An important point in the castor oil treatment lies in diet. It is difficult to restrict the diet of the uneducated native. With routine castor oil treatment all dysenteric patients were allowed full diet—cooked bananas or sweet potatoes, tea, soup, with meat when available, sugar cane, and milk when the supply could meet the demand. No ill effects were noted from this innovation. The bacteriological aspect of the epidemic as reported by Dr. H. L. DUKE showed :—

Cultures ...	Shiga	2 cases.
	Flexner	3 „
	No organisms ...	6 „
Agglutinations	Shiga	11 cases.
	Flexner	19 „
	S. and F. mixed	5 „
	Negative results...	10 „

H. M. H.

KOETSIER (J. H.) & ZIESEL (H. J.). Eenige mededeelingen over de dysenterie-epidemie te Staphorst. [**Some Notes on the Epidemic of Bacillary Dysentery in Staphorst. (Province of Overyssel, Netherlands.)**]—*Nederl. Tijdschr. v. Geneesk.* 1925. Dec. 26. Year 69. 2nd Half. No. 26. pp. 2856–2861.

The epidemic in Staphorst [a little village of backward habits of personal hygiene, in one of the eastern provinces] commenced July 10th, attained its height in August, and declined in September. Bacteriological examination demonstrated bacilli of the " non-toxic " kind (Flexner, Hiss) as the causal agent. The first cases were among children only and were diagnosed as infantile diarrhoea ; afterwards adults were likewise affected (two-thirds of them women), but always remained in the minority. Fatal cases were few in number, mostly among the aged and the very young. Some 300 cases (among a population of 5,000) came under treatment, but many more were slightly ill without seeking medical aid. The infection spread by direct contact ; water could be excluded as a vector ; flies, on the contrary, were probably of much importance. In the treatment bilivaccin proved of little use, but polyvalent anti-dysenteric serum was applied with great success in some 10, mostly chronic, cases where other methods had failed.

N. H. Swellengrebel.

HILLIARD (E. T.). **Dysentery in Mental Hospitals with Special Reference to the Types of Organism involved.**—*Med. Jl. Australia.* 1925. Dec. 19. 12th Year. Vol. 2. No. 25. pp. 695–698. With 2 charts in text. [3 refs.]

Dysentery has always been endemic in mental hospitals, at times flaring up into epidemics and notoriously resistant to attempts to eradicate it. This is due to faulty habits of patients who have had dysentery ; certain types show a tendency to quiescent periods during which mucus can be demonstrated in the stools ; a relatively high percentage of new admissions to hospital are already affected. The main clinical types are mild, relapsing and toxic. Treatment is by dieting and serum. In 70 per cent. of the acute cases the organism was isolated from the stool and proved to be Shiga 10 per cent., Flexner 30 per cent., Y 30 per cent. The sera of 30 convalescents gave agglutination reactions as follows : Flexner 10 patients, Flexner Y 14 patients, Shiga 6 patients. In recent cases the earliest agglutination reaction appeared on the 16th day of the disease, or 10 days after the clinical symptoms had subsided; by the end of two months it was well defined and persisted. A high degree of correlation existed between the serum reactions and bowel culture findings and the clinical symptoms of the disease. Flexner Y type produces little constitutional disturbance, is almost afebrile, and tends to relapse; Flexner type, more disturbance, moderate fever, and few relapses; Shiga type, severe disturbance and high fever, but no relapses. Flexner and Flexner Y are, therefore, potent aetiological factors in the endemicity of the disease. Among those who had occasional mucus in stools or looseness of bowels at varying periods after the original attack, four yielded agglutination reaction with Y strain and in one Y bacillus was isolated.

Prophylaxis.—The carriers are there. Some are recognized, others undoubtedly missed. It is important to (1) prevent introduction of the disease by 3 weeks' careful observation of newcomers and enquiry concerning previous attacks; (2) prevent patients who have suffered from dysentery being transferred from one to another, especially a newly opened, hospital; (3) isolate promptly all cases of diarrhoea, dysentery and carriers, for as long a period as possible; (4) protect healthy persons by raising their resistance. A Flexner stock vaccine is now under trial.

H. M. H.

WEBSTER (Reginald) & WILLIAMS (F. Eleanor). **Bacillary Dysentery in Infancy and Childhood. Part I. Dysentery Bacilli as recovered from the Motions of Infants and Young Children. Part II. The Serum Therapy of Infantile Dysentery.**—*Med. Jl. Australia.* 1925. Dec. 5. 12th Year. Vol. 2. No. 23. pp. 648–658. With 1 chart in text. [8 refs.]

In Part I the authors call attention to the fact that the identity of specific infection with *B. dysenteriae* in children is apt to be lost under the loose nomenclature "summer diarrhoea." Moreover, the bacillary dysentery of children is not a disease of the summer months exclusively, although it may assume epidemic proportions at this time. 150 strains of dysentery bacilli were recovered from stools, and 121 of these were classified serologically. All these strains belonged to the mannite-fermenting Flexner group and nine examples of the late-fermenting, serologically-specific, Sonne bacillus are included. The Shiga bacillus is negligible as a factor in infantile bacillary dysentery in Melbourne.

Formalinized, approximately standardized, suspensions of the V, W, X, Y, Z, and Sonne bacilli were used with their corresponding high-titre sera. Both agglutination and absorption tests were applied. The X race of dysentery bacilli did not occur at all. Out of the 121 strains isolated between 1922–25 the percentages of V, W, Y, and Z organisms were 23·9, 46·2, 9 and 13·2. In this 121 are included 9 strains of the Sonne organism, which, however, were only met with in 1922–23. There is little to choose as regards death-rate between the different races of Flexner bacilli.

"Dysentery-like" bacilli were recovered from some stools that were highly suggestive of dysenteric infection.

Part II. The results of serum therapy in children were on the whole disappointing, but this is regarded, from the evidence available, as probably due to the lateness of the administration. In this connexion much depends upon the report of the bacteriologist. MacConkey plates were used, and, by the institution of a specially accelerated procedure, which included agglutination tests, a provisional, but sufficiently satisfactory, report could be given on the morning of the day following that on which the stool was received in the laboratory.

W F Harvey

BRAUER (L) Die Pathogenese der bazillaren Ruhr in ihrer Beziehung zu den klinischen Krankheitsbildern [**The Pathogenesis of Bacillary Dysentery in its Relation to the Clinical Picture.**]—*Beihefte z Arch f Schiffs- u Trop -Hyg* 1925 Vol 29 No 1 pp 449–460 [2 refs]

The author discusses this relation, and emphatically states that more decisive in determining the course of the illness and its final result is the power of resistance of the type of human being affected than the peculiar quality or species of the exciting agent Bacillary dysentery can best be grouped according to the various clinical pictures it produces in different types of man

H M H

CONNAL (Andrew) & SMITH (E C) **Report on a Fatal Case of Bacillary Dysentery in Nigeria.**—*Jl Trop. Med & Hyg* 1925 Nov 2 Vol 28 No 21 pp 379–381 [1 ref]

A report giving the clinical history and bacteriological and autopsy findings, in *the first case of bacillary dysentery recorded from Nigeria*

In 1918, on the return of native troops and porters from the East African campaign, it was decided to investigate fully and systematically all cases of dysentery in Lagos, special efforts being made to secure freshly passed stools from all patients In 1920, Flexner bacillus was isolated from a war veteran who had served in countries where bacillary dysentery existed There were, however, abundant *E histolytica* in the stools and the attack responded quickly to emetine treatment Apart from this case, the search, though continued practically uninterruptedly and by several workers during the past seven years, had been unsuccessful. No bacteriologically confirmed case had been reported from the Gold Coast or Gambia BUTLER recorded cases in Sierra Leone in 1919

The patient, male adult, native of Lagos, died after 7 days' dysentery No amoebae, cysts, or spined ova were found in stools Emetine had apparently no effect A loopful of blood-stained mucus was mixed in 10 cc peptone and after two hours was inoculated on MacConkey plates After 24 hours' incubation, colonies of a non-lactose-fermenting organism were obtained The organism was gram-negative, non motile, and fermented mannite and glucose without gas formation It did not produce indol in broth The patient's serum gave a rapid naked-eye slide agglutination with a known Flexner type of organism, and much slower and less marked clumping with a known Shiga and a known Y type Post-mortem broth cultures were made from heart's blood, gall bladder contents, urine, and contents of colon. A pure culture of a non-lactose fermenter with properties similar to that obtained from the stools ante mortem was grown from urine, *gall bladder* and colon. The autopsy and histological findings showed the case to have been one of generalized blood infection of a severe nature with a relatively mild local colon involvement.

The recovery of the bacilli from the gall-bladder leads to a suspicion that this organ may, as in typhoid, harbour the organism for a considerable time (bile carriers).

The case demonstrates that all cases of clinical dysentery in Nigeria need not necessarily be amoebic. Bacillary dysentery in the four West African colonies, if uncommon, yet exists. Though there are no histories of epidemics, conditions climatic and otherwise are not unfavourable to its endemicity. Continued investigation is required.

H. M. H.

FALCÃO (Edgard de Cerqueira) Um caso de dysenteria bacillar, produzida pelo "Bacillo de Shiga-Kruse." **[A Case of Bacillary Dysentery due to the Shiga-Kruse Bacillus.]**—*Sciencia Medica* Rio de Janiero. 1925. Dec. 31. Vol. 3. No. 12. pp. 728–731. With 1 chart in text. [1 ref]

A detailed account of a case of severe bacillary dysentery due to the Shiga-Kruse organism and proving fatal on the 16th day after admission to hospital. The chief point of interest is the temperature, the chart of which for the last ten days is depicted It was of the sawback type, but subnormal, ranging between 33·8° C. and 37·2° C till the day of death, when it fell to 32·9° C

H Harold Scott.

BROKMAN (H.) & PRZESMYCKI (F.). Badania nad wrażliwoscią osobniczą na czerwonke. Experimentelle Untersuchungen ueber die individuelle Empfindlichkeit für das Shiga-Toxin. **[Researches on the Individual Susceptibility to Shiga Toxin.]**—*Medycyna Doświadczalna i Społeczna*. Warsaw. 1925. Sept.-Oct. Vol. 5. No. 3–4. pp. 247–251. German summary p. 252.

As with diphtheria toxin, so, these investigations showed, intracutaneous injection of Shiga toxin called forth a local reaction by means of which differences in individuals could be established. The serum of human beings who give a negative skin reaction can neutralize the dysentery toxin, while the serum of those with positive skin reaction cannot. Analogous with the Shick reaction—insensitiveness to Shiga toxin signifies insusceptibility to acquiring the disease. The principle of physiological immunity to toxin-forming bacteria is, accordingly, uniform, and depends on the amount of antitoxin formation.

H. M. H.

DAUTWIZ. Ruhrheilstoff-Boehncke bei infektiösen und nicht-infektiösen Darmkatarrhen. **[Boehncke's Dysenteric Remedy in Intestinal Catarrhs, Infective and Non-infective.]**—*Deut. Med. Woch.* 1925. Nov. 13. Vol. 51. No. 46. pp. 1913–1914. [1 ref.]

The author in 4 years' experience of the treatment of dysentery and diarrhoeas with BOEHNCKE's polyvalent sensitized dysentery vaccine, given by subcutaneous injection, has had uniformly favourable results from this therapy. It can safely be given to children. Castor oil and diet are other items in his treatment. He gives no clinical data. He states that it is all-important that acute diarrhoeas, true dysentery or otherwise, be treated promptly. The toxaemia accompanying them is dangerous. This general poisoning disappears in about 6 hours after the first injection, with marked improvement of the whole condition of the patient and rapid cessation of symptoms of intestinal inflammation.

H. M. H.

PERRY (H. Marrian). **Laboratory Research on Bacillary Dysentery.**—*Jl. Roy. Army Med. Corps.* 1925. Nov. Vol. 45. No. 5. pp. 345–349.

The author recommends further investigation into: (*a*) The persistence of dysentery bacilli in the faeces of convalescents; (*b*) the value of serum reactions in the diagnosis of the acute and chronic diseases. Tables are given of persistence of bacilli in the faeces, which are worth noting. In the case of chronic carriers of B. Shiga the positive results 4, 6 and 12 months from onset were 77, 19, and 4 per cent. respectively, and for *B. dysenteriae* Flexner 59, 34 and 7 per cent. Reference is made to the important work of CUNNINGHAM on "Latent dysentery," and to the ease with which macroscopic and microscopic examination of the stool can be carried out, when bacteriological examination is apt to yield very irregular results. If only the apparent health of the carrier of dysentery bacilli be looked to, there is a great possibility of the fact of carriage being missed.

Serum agglutinating reactions in dysentery are specially recommended for re-investigation. For these the macroscopic technique should be used and either standardized agglutinable suspensions or formalinized bouillon cultures of standard opacity. It is pointed out that no case of Shiga dysentery, where the bacillus has been isolated, has failed to show specific agglutinins; in mild cases the titre may be as low as 1 in 25. The result may not be so easy to bring out in Flexner dysentery, owing to the existence of a number of closely related strains of mannite fermenting causal organisms in this disease which yet are serologically different. A negative result, therefore, in this form of bacillary dysentery is not of such value as a positive. Apparently "normal" sera, too, may agglutinate Flexner bacilli, but this may be due to a previous mild and unrecognized infection. A serological examination in all cases of chronic dysentery should be made.

W. F. Harvey.

PRIGGE (Richard). Experimentelle Untersuchungen ueber das Gift des Flexnerschen Ruhrbacillus. [**Experiments on the Toxin of the Flexner Bacillus.**]—*Ztschr. f. Hyg. u. Infektionskr.* 1926. Jan. 31. Vol. 105. No. 3-4. pp. 488–494. [16 refs.]

The strain of Flexner bacillus used had a lethal action, by intravenous injection in mice, about half that of a Shiga-Kruse strain. Three preparations were tested—the dried toxin, the wash-water toxin, and a bouillon toxin. The first two of these were prepared according to the method of SUDMERSEN and EAGLETON: A 24-hour culture is suspended in distilled water, heated for 15 minutes at 58° C., and centrifuged at high speed. The deposit and the supernatant fluid are both dried, constituting "dried toxin" and wash-water toxin respectively. The dried toxin had only one-twentieth to one-twenty-fifth the toxicity of the similar toxin from the Shiga-Kruse strain and the wash-water toxin was one-quarter to one-fifth as toxic. Immunization of rabbits with Flexner dried toxin did not furnish a serum capable of neutralizing that toxin. Moreover, the serum of a rabbit immunized with a living culture of Flexner bacilli did not neutralize the toxic properties of the dried toxin, showing that no "bouillon toxin" had been produced in the culture used. The conclusion is drawn that the Flexner toxin is not a true toxin but an endotoxin.

W. F. Harvey.

ISABOLINSKY (M.) & GITOWITSCH (W.). Ueber Mutationserscheinungen der Dysenteriebazillen Shiga-Kruse. [**Mutation Phenomena of Shiga-Kruse Bacillus.**]—*Cent. f. Bakt.* I. Abt. Orig. 1926. Jan. 30. Vol. 97. No. 2-3. pp. 148–152.

The test organisms belonged to the Shiga-Kruse dysentery group. Bouillon and agar cultures of these were kept for 1½ months and for 4 months 11 days in the dark at room temperature, when their characters were tested on a variety of media—ordinary, Endo, Klopstock's nutrose, Capaldi and Proskauer's mannite, and Rothberger's neutral red agar media. These cultures constituted first generation cultures. All types of colony of the first generation, sown on Endo agar, were transplanted to ordinary agar and Endo agar and likewise kept. These constituted the second generation cultures.

The appearances of the colonies of the first and second generations were investigated after sowing, while the bacteria themselves were examined morphologically and in respect of Gram staining. Their biological characters were also determined: Thus, after 1½ months at room temperature, the various types of colony derived from the first generation in bouillon showed coli-like characters—acid on Klopstock's medium and gas development on Rothberger's medium.

The colonies of the second generation, on the other hand, showed deviations approximating more closely to typhoid organisms.

Serologically, second generation Shiga-Kruse organisms agglutinated only at 1 in 100 with a serum of 1 in 8,000 titre. The organisms of the first generation, after 1½ months at room temperature, agglutinated at 1 in 500 dilution, and those which had been kept for 4 months and 11 days at the full titre of 1 in 8,000.

The deduction drawn is that the Shiga-Kruse dysentery bacilli afford, with alteration of external conditions, a whole series of variants of which the first generation approximates in morphological, biological and cultural properties to the *coli* group of organisms and the second generation to the typhoid group.

W. F. Harvey.

ISABOLINSKI (M.) & GITOWITSCH (W.). Zur Frage ueber die Variabilität der Dysenteriebazillen vom Typus Chiga-Kruse. [**Variability of Shiga-Kruse Dysentery Bacilli.**]—*Rev. Microbiol. et Epidémiol.* 1925. Vol. 4. No. 3. German summary p. 83. [In Russian pp. 3–8.]

A laboratory culture of Shiga-Kruse type of dysentery bacillus, which had been tested and found not to vary except for a decrease in agglutinability, showed, after keeping for a longer time at room temperature, a cycle of variability. These changes morphologically and biologically approached closely to the typhoid and coli groups. The greatest change was shown in the agglutinability by serum not specific for itself.

H. M. H.

LACY (G. R.). **A Report of Typical and Atypical** *Bacillus dysenteriae* **Shiga, with Special Reference to Agglutination Reactions.**—*Philippine Jl. Sci.* 1925. Nov. Vol. 28. No. 3. pp. 313–328. [22 refs.]

Of all the dysentery organisms, the Shiga group is that which shows the highest degree of uniformity of character. Studies conducted recently have shown that certain irregularities do occur among the Shiga type bacilli. Lacy distinguishes here more than one serological group.

Forty-five strains in all were tested. The organisms were sown on agar of pH6·0 and suspensions made from 24-hour growths. The suspension was heated for 60 min. at 56° C., and kept for use, without preservative, at a temperature of 6° to 10° C. Rabbits furnished the testing agglutinating sera after 4 intravenous inoculations, at 7-day intervals, of successive doses, each of which was double the previous dose. Blood for serum was drawn off 7 days after the last inoculation.

The results of testing the strains were :—

1. Cultural. No differentiation.
2. Biochemical. Indol was the only differential character. Typical *B. dysenteriae* Shiga produces no indol.
3. Pathogenicity. All strains were pathogenic, some in greater, others in less degree.
4. Agglutination. Macroscopic test ; serum dilutions 1–100 to 1–12,800 ; reading after 18 hours at 37° C. There emerged 3 groups, a large (27) and a small (9) differentially agglutinable group, and a small (9) inagglutinable group. None of the strains of the inagglutinable group could be rendered agglutinable by treatment.
5. Adsorption. These tests showed the same clear-cut differences as between the two agglutinable groups.
6. Protection. This was afforded in high degree for all the three groups of living organisms, administered intravenously, by a polyvalent anti-dysentery serum, administered intraperitoneally.

W. F. Harvey.

NAKAMURA (K.). Zur Biologie der in künstlichen Nährböden gezüchteten Shiga-Kruse-Bazillen. **[Biology of Shiga-Kruse Bacilli on Artificial Media.]**—*Cent. f. Bakt.* I. Abt. Orig. 1925. Oct. 10. Vol. 96. No. 3-4. pp. 213–219. [15 refs.]

The biological characters of the Shiga-Kruse bacillus here investigated were those of ammonia assimilation and agglutinability, under varying conditions of artificial growth. In order to test ammonia assimilation after subjection to these conditions, it was determined whether the organism would grow freely in a medium where ammonia was the sole source of nitrogen. Nakamura used a Shiga strain which grew freely upon an ammonium lactate medium in his experimentation on the result of culture in animal fluids. The research is summarized as follows : (1) No loss of ammonia assimilation is evident from cultivation in fresh and inactivated normal rabbit serum ; (2) a loss of agglutinability results after a series of passages in fresh and inactivated normal rabbit serum. The capacity, however, for fixing agglutinin remains intact, although the bacilli have become difficult to agglutinate ; (3) Shiga-Kruse bacilli which have been long cultivated in ammonium lactate media may lose their agglutinability altogether. Such bacteria fix no agglutinin, nor can they act as antigen for the development of agglutinin in the animal body. These, then, represent truly inagglutinable organisms, although other cultural characters remain unaltered

W. F. Harvey.

TANAKA (Iwao). Ueber die Ruhrbazillenstaemme, die Mannit zu vergaeren nicht imstande sind [**Strains of Dysentery Bacilli that do not ferment Mannite.**]—*Scientific Reports from Govt. Inst. for Infectious Diseases.* Tokyo. 1924. Vol. 3. pp 1–10. [25 refs]

Fifteen strains, which did not ferment mannite, were selected from 106 strains of dysentery bacilli available These strains corresponded in form and cultural properties to the dysentery bacilli which are already known They were tested for production of indol, and for virulence on mice The main investigation was of their power to ferment carbohydrates, of which 16 were used in test They are differentiated from Shiga bacilli by their power to ferment arabinose and maltose

As a result of the testing, two groups emerged Group 1 included those which fermented dextrose, laevulose, galactose, mannose, and arabinose Group 2 was formed by those which fermented maltose (dextrin and starch) in addition A third group is added to these, extracted from the literature on the subject, consisting of organisms which ferment dextrose, laevulose, galactose, mannose and rhamnose.

W. F. Harvey.

MULLER (Léon) Milieux pour la recherche des bactéries du groupe typho-dysentérique [**Media for the Investigation of the Bacteria of the Typho-dysenteric Group.**]—*C R Soc. Biol.* 1925. July 17. Vol. 93. No. 25. pp 433–436. [2 refs.]

Modifications of new media, previously published by the author, are here described. They give, in his hands, remarkably constant results in the diagnosis of infections or of carriers. The description of these media is as follows :—

Differentiation Medium—(1) Prepare Peptone 15, di-sod sulphate 2·5, pot. chloride 2·5, Lablemco Liebig extract 10, water 1,000, with reaction pH 7·6 (2) Add 3 per cent agar (3) Heat 60 min at 106° to 108° C (4) Decant, for use, the clear part without filtering (5) Mix with 1 litre of this agar medium at 55° to 65° C—(*a*) 100 cc 25 per cent. lactose, sterilized 30 min at 100° C, (*b*) 20 cc carbolized pot tartrate (Merck) solution containing 20 gm tartrate and 2 cc liquid phenol to 100 cc water, (*c*) 20 cc 20 per cent. ferro-cyanide solution

On this medium, without any colouring matter, colonies of *B. coli* appear greenish blue, whilst the pathogenic coliform organisms, the typhoid and dysentery group organisms, are grey with a tinge of yellow.

Enrichment Medium. (1) Sterilize 10 gm. calc. carbonate, of the lightest variety obtainable, in the autoclave. (2) Add to the sterilized calc. carbonate 90 cc. of Lablemco Liebig bouillon prepared as above, but of pH 7·4, and 10 cc. sterile pure 50 per cent. sod. hyposulphite solution, all well cooled. (3) Shake thoroughly to mix. (4) Distribute the medium in amounts of 10 cc. into tubes or small flasks. (5) Add to a series of these tubes or flasks varying quantities of sterile iodine-iodide solution (25 per cent iodine, 20 per cent pot. iodide), such as 0·2, 0·25, 0·3 cc. (6) Mix immediately (7) Sow 2 drops of the test stool, diluted 1 in 20, in the iodized tubes or flasks. (8) Incubate 16 to 20 hours. (9) Sow after incubation on plates of the above-described differentiation medium

The elimination of *B. coli* is generally complete in the case of *B. paratyphosus B.* with 0·1 iodine and in the case of *B. typhosus* with 0·15 to 0·2. With the higher dosage of iodine, if there is no growth after 24 hours, it is possible to obtain, when present, a pure culture of *Enterococcus* (*Str. faecalis*) after 48 or 72 hours' incubation.

W. F. Harvey.

VAZ (Eduardo). Immunização per os contra o B. de Shiga. Contribuição ao estudo da natureza da immunidade. Immunisation *per os* contre le bacille de Shiga. Contribution à l'étude du mécanisme de l'immunité.—[**Immunization per os against Shiga's Bacillus.**]—*Mem. Inst. de Butantan.* 1925. Vol. 2. No. 1. pp. 99–116. French summary pp. 117–119. [19 refs.]

The author adheres to the views regarding immunity put forward by BESREDKA—an immunity which is of generalized character, but of local origin, and due to the immunization of a definite organ or area. The research was carried out with the Shiga bacillus and stress is laid upon the importance of choosing that strain for immunization which shall be as little toxic and as highly antigenic as possible. The experiments on immunization *per os* were made with this strain, in rabbits. The rabbits were given 3 or 4 increasing doses of dead bacilli at intervals of 2 or 3 days The test of protection was made with living organisms, 14 days or more after the last immunization dose, by oral, subcutaneous, or intravenous administration. At the same time the neutralizing and agglutinating powers of the sera of the immunized animals were tested *in vitro*. The conclusions drawn are :—

1. General immunization of rabbits can be effected *per os* with dead Shiga bacilli, although many deaths take place during vaccination and before test.

2. Death takes place by intoxication, as judged by loss of weight, symptoms of dysentery, and lesions produced : the degree of intoxication is dependent on the original condition of the animal (especially as regards coccidiosis), on the dose, and on the strain used.

3. Two strains, I.O.C.1 and Fujimoto, gave a high degree of immunity against tests made by oral, subcutaneous, and intravenous administration.

4. With the development of immunity, the serum of the animal shows antitoxic but not agglutinating power.

5. In the absence of antitoxic power of the serum there is no immunity, either local or general, even by the buccal route.

W. F. Harvey.

OTTEN (L.) & KIRSCHNER (L.) Orale vaccinatie tegen bacillaire dysenterie [**Vaccination by Mouth against Bacillary Dysentery.**]—*Geneesk Tijdschr v Nederl.-Indie* 1925 Vol 65 No 5 pp 608–623 [13 refs]

The authors draw the following conclusions from their experiments —

(1) It is possible to immunize rabbits against dysentery (Shiga) by oral administration of killed bacilli

(2) This oral vaccination causes an immunity against parenteral as well as enteral infection, stronger than the immunity obtained by subcutaneous vaccination, at least if large quantities are administered (50–100 times the subcutaneous dose)

(3) The serum contains antitoxins and after repeated oral dosage shows an increasing agglutination titre, which does away with BESREDKA's principal argument in favour of local immunity of the intestinal wall

(4) For appraisement of the practical value of this method of vaccination its application on a large scale is necessary

W J Bais

KRAUS (R.), AWOKI (T.) & KOVÁCS (N.) Dysenteriebazillus Shiga-Kruse Ueber aktive Immunisierung mit atoxischen Kulturfiltraten II Mitteilung [**Active Immunization against Shiga-Kruse Bacilli with Atoxic Culture Filtrates. No. 2.**]—*Ztschr f Immunitatsf u Experim Therap* 1925 Oct 31 Vol 45 No 1 pp 42–48 [8 refs]

An introduction draws attention to the original work of EHRLICH on toxoids and of those who subsequently used these instead of toxin for immunization purposes A reference is made in passing, to the use of the word ' anatoxin by RAMON The authors consider that toxoids may not only develop from toxin but may also be found as a stage *preceding* the actual formation of toxin In their own investigations they have used atoxic filtrates (paper) of Shiga-Kruse bouillon cultures (24, 47, 72-hr) intravenously and subcutaneously and succeeded in protecting rabbits against intravenous injection of several lethal doses of toxin

Thus rabbit 104 received 1 cc atoxic filtrate intravenously and 7 days later still, 0 5 cc toxin subcutaneously The rabbit survived This is only one of four experiments given

That the survival under these circumstances was a specific effect is supported by this experiment Two rabbits were each inoculated subcutaneously with 1 and 3 cc of the filtrate of a 3-day old Flexner bouillon culture at an interval of 7 days They were then given, 9 days later, 0 2 cc Shiga-Kruse toxin intravenously and died in 24 hours The Flexner filtrate did not protect against Shiga-Kruse toxin

The toxoid filtrate would appear to be antigenic not only against toxin, but also against infection by living organisms

Rabbit 122 received 1 cc of toxoid (atoxic) filtrate intravenously and 7 days later 5 cc subcutaneously Seventeen days after the last inoculation it received 0 1 cc toxin intravenously and survived Twelve days later still a subcutaneous injection of 0 5 cc suspension of a living culture of the Kruse-Shiga bacillus was given subcutaneously and the animal survived this injection likewise The control rabbit died in 48 hours

This last experiment suggests the utility of atoxic dysentery filtrates for prophylactic immunization. The views of the authors are summarized as follows: "In the formation of certain bacterial toxins atoxic stages develop (protoxoid), which can produce active antitoxic immunity and which may be used for both therapeutic and prophylactic purposes."

W. F. Harvey.

MEYER (Kurt). Zur Kenntnis des heterogenetischen Antigens in Shiga-Bazillen. [**Heterogenetic Antigen of Shiga's Bacillus.**]—*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1925 Nov. 25. Vol. 45. No. 2. pp. 97–110. [12 refs.]

The author in this article refers to work already published under his direction by FUJITA, which demonstrated the production of a highly potent serum-haemolysin for sheep's erythrocytes from the immunization of rabbits with Shiga dysentery bacilli. It has recently been contended by H. SCHMIDT that this haemolysin is of a non-specific character, but this view is strongly contested by Meyer and the experiments given are devised with this object. In particular, it is differentiated from the normal haemolysin contained in rabbits' blood and from the haemolysin which is obtained by the injection, as antigen, of the organs of guineapigs. As one example of the specific character of the haemolysin we may give the technique used by the author to demonstrate absence of effect upon haemolytic power of absorption of the Shiga haemolysin with staphylococci:—

(1) Keep a mixture of 1 in 10 dilution of the haemolytic serum and a thick suspension of killed (30 min at 60° C) staphylococci for 30 min. at 37° C and then for 30 min at 0° C (2) Centrifuge the mixture (3) Set up descending quantities, 0·15, 0·1, 0·07, 0·05, and 0·03 cc of the supernatant clear fluid with 0·25 cc 5 per cent sheep blood and keep for 30 min at 0° C (4) Centrifuge the mixture and remove the supernatant fluid (5) Suspend the deposit in 1 cc normal salt solution. (6) Add 0·25 cc 1 in 10 dilution of complement. (7) Keep 30 min at 37° C. (8) Read the haemolysis

The result was that no evidence of any absorption of haemolysin by the staphylococci was demonstrable. Ten strains were used in the experiment.

Other experiments bearing on the specificity of the Shiga haemolysin are described. The summary of the work reads as follows:—

In the immunization of rabbits with Shiga-dysentery bacilli heterogenetic sheep blood haemolysins develop with great regularity, and to an extent which is not manifested with other bacteria, even of allied species This haemolysin has the peculiarity that it does not combine extremely readily with sheep erythrocytes and is differentiated thereby from the heterogenetic haemolysins of organ-antisera and the haemolysins of normal sera On the other hand, this haemolysin is energetically fixed by Shiga bacilli to a high degree, and is strongly bound.

W. F. Harvey.

SCHLOSSBERGER (H.) & HARTOCH (O.). Weitere Untersuchungen ueber die Wertbestimmung des antitoxischen Dysenterieserums. [**Evaluation of Antitoxic Dysentery Serums.**]—*Deut. Med. Woch.* 1925. Nov. 6. Vol. 51. No. 45. pp. 1854–1855. [5 refs.]

The view held by the authors is that dysentery toxin is a single toxin and not a mixture of ecto- and endo-toxin. Moreover, their determinations of the potency of antitoxic dysentery sera were deliberately carried out after the manner of EHRLICH for diphtheria and tetanus sera, where a preserved standard serum is used as the measure Toxins of four different kinds were used in the tests, toxin dried according to the English method, wash-water toxin, so-called " whole " toxin and bouillon toxin The tests showed that dysentery toxin, like other toxins, contained toxoids in varying amounts thus :—

	Lethal dose for mouse	German standard serum required to neutralize 5 M L D
Dried toxin, English	0 02 mgm	1–500 cc
Dried wash water toxin	0 8 ,,	1–500 ,,
" Whole " toxin	0 1 ,,	1–350 ,,
Bouillon Toxin (German test toxin)	0 125 ,	1–160 ,,

The antitoxic sera which were compared were English standard serum C 950, Japanese standard serum 128, and the German standard serum All four of the above named toxins were put up against each of the standard sera and the method of procedure was as follows : The L+dose of each toxin was determined by reference to the German standard serum and each of these doses was used throughout for evaluation of the potency of the English and Japanese sera, with the result that the relative potencies of English, German and Japanese standard sera worked out consistently for each of the 4 test toxins at approximately 1 3 128 This gives the values in international units as —

1 cc fluid English standard serum C 950 - about 12 to 15 international units
1 cc German standard serum solution = about 40 international units
1 cc Japanese standard serum solution = about 600 international units

These experiments show well that standardization of dysentery sera can be effected with any toxin, through the medium of a preserved standard antiserum of constant potency

W F Harvey.

PERUZZI (Mario) La *Vibriothrix zeylanica* (Castellani) nei dissenterici di Pola [*V zeylanica* **in Dysentericis at Pola.**]—*Ann di Med. Nav e Colon* 1925 Sept -Oct Year 31 Vol 2 No. 3–4 pp 141–158 With 36 figs on 3 plates [10 refs]

The author isolated from 13 cases of dysentery an organism which was sent to Dr CASTELLANI for identification, and it was found in each case to be the *Vibriothrix zeylanica* (Castellani) A minute account of this organism is given describing particularly its polymorphism—undulating, vibrio-spirillar, filamentous and branching, club-shaped and spherical forms 1½–2 loopfuls of a 48 hours' culture on glucose-blood-agar, emulsified in saline and injected intraperitoneally, killed guineapigs of 350 gm. weight in 30 hours Half this dose caused toxic symptoms and loss of weight, but the animal survived and had developed immune bodies in 10 days The paper is embellished with microphotographs of the organism in its varied forms

H Harold Scott.

Mixed and Unclassed Dysentery.

Haughwout (Frank G.) & Callender (George R.). **Dysentery: its Diagnosis and Management through the Microscope.**—Reprinted from *Internat. Clinics.* 1925. Vol. 2. Ser. 35. pp. 103–140. With 32 figs. on 17 plates. [31 refs.]

An abstract must fail to do justice to this well-planned and well-illustrated monograph, containing the clearly presented fruits of a wide and critically informed observation, clinical, microscopical and pathological, at first hand, of bacillary, amoebic and balantidial dysentery in the Philippines. Its authors, and the service to which they belong, are to be congratulated on their work, which entirely deserves the attention of the medical profession in every clime.

Part I deals with the pathology of the dysenteries. It is thorough and instructive. It must be noted that, after an attack of bacillary dysentery, in the healing of the ulcers sometimes islands of gland tissue are buried beneath the surface. The glands secrete forming cysts which project as translucent mounds containing thin watery fluid. *Dysentery bacilli have been found in these cysts*; thus explaining one cause for bacillary dysentery carriers. [Among this disease's effects *outside* the intestinal tract, synovitis of joints is not mentioned.] The microphotographs illustrate clearly the essential points in the morbid histology and tissue invasion which occur in the three dysenteries, and which the authors expound in the accompanying text. These pathological findings fit in with and give gross and microscopic anatomical proof for the distinctive microscopical pictures of the stools in bacillary and protozoal dysenteries respectively which are in turn dealt with in—

Part II. Differential Diagnosis of Dysenteries (Haughwout).

Manson (1914), is quoted:—

"Amongst tropical diseases the group of morbid conditions included by the general term 'dysentery' ranks in importance next to malaria." This is just as true to-day. The successful management of dysentery depends almost entirely on accurate diagnosis at the onset of the disturbance. Efforts to determine the type of dysentery on purely clinical grounds will be attended by an incidence of error so great that correct diagnosis is the result of pure chance. Over 10 years' experience has convinced Dr. Haughwout that it is safest for the clinician to make a *presumptive* diagnosis of dysentery, and proceed without delay, not to treatment, but to microscopical investigation to find out what type of dysentery be present, and *only then* institute appropriate treatment. The clinician is faced with three problems:—

(1) That the disturbance is actually dysentery and not some other acute but non-dysenteric process.

(2) Is it bacillary, amoebic, or balantidial dysentery?

(3) The prompt, sustained, adequate application of appropriate treatment, with due attention to any concomitant condition, and a watchful eye for possible sequelae.

These three conditions very closely divide the responsibility for the outcome of a case between microscopist and clinician.

Clinical diagnosis is subject to error because—

(1) Many Flexner type bacillary dysenteries run a relatively afebrile non-toxic course, and may, therefore, easily be mistaken for amoebic dysentery. If treated as amoebic, not only does the bacillary process

run unchecked to a possible fatal end, *but emetine administration to a toxic patient may cause serious cardiac symptoms.*

(2) In protozoal dysentery an accompanying affection may cause fever, which may be attributed to the dysentery, and lead to an erroneous diagnosis of bacillary dysentery. Antidysenteric serum of itself does no harm to such patients, but it has no effect on the amoebic infection. The subsidence of the latter during the rest and dieting of the patient leads to supposed "cure." Such patients relapse.

(3) The macroscopic appearance of the dysenteric stool presents no character that can be used confidently in differential diagnosis.

Bacteriological diagnosis has practical objections:—

(1) Uncertainty in isolating the bacillus from the stool; this increases directly and rapidly as time elapses between passage of stool and its inoculation upon culture media. It is very hard to cultivate the bacillus in the late stages of the disease.

(2) In general practice it is usually impossible to furnish the bacteriologist with fresh enough material.

(3) It is impossible to secure conclusive bacteriological results under 36 hours. By that time the disease may have proceeded to a point where specific treatment is of no avail.

(4) No dependence whatever can be placed on serological examination of the patient's blood: agglutinins for the dysentery bacillus are not developed for several days after onset of illness; and it has often been noted that serum of individuals who give absolutely no history of dysentery may agglutinate the organism in fairly high dilution.

(5) Negative bacteriological results may be (and have at time disastrously been) interpreted as positive amoebic findings, by so-called process of exclusion.

This discouraging outlook brings one to the final resort.

Microscopic diagnosis rests on two principles harmonizing with the morbid anatomy pictures already presented.

(1) Knowledge of the pathology consequent on invasion of gut wall by a specific bacterium; by *E. histolytica* and *Balantidium coli.*

(2) Ability to identify the tissue dwelling forms of *E. histolytica,* and to recognize the rarer parasite *Balantidium coli.*

The dysentery bacilli cause phenomena in the tissues characteristic of intense inflammatory reaction to bacterial infection accompanied by manifestations of toxic necrosis. On the contrary, tissue reactions produced by amoeba and balantidium are mild. There is no evidence that they can produce either inflammatory reactions or toxaemia. All these appropriate phenomena are apparent not only in sections of the dysenteric gut, but may be demonstrated on the surface of the mucosa as well. The appearances on the surface of the mucosa are transferred to the outer world in the dysenteric movement where they are revealed to the microscopist: as truly as he can determine the type of dysentery by the study of stained sections of the gut, so can he do the same by study of its replica—the dysenteric exudate. This gives the basic principle, and evidence of its reliability, to the differential cyto-diagnosis of the dysenteries. MANSON-BAHR (1910) appears to have been the first worker to point out the diagnostic significance of the exudate in bacillary dysentery; WILLMORE and SHEARMAN (1918) first gave comprehensive exposition of the subject. *The criteria for cyto-diagnosis are available in bacillary dysentery from the early onset of the illness. Diagnosis can, therefore, be prompt and many an attack*

aborted by one or two small injections of serum: moreover, serum administered after the third or fourth day is usually much less efficacious.

Unlike bacillary, acute amoebic and balantidial dysenteries are not as a rule in full swing until 2 or 3 days after the premonitory symptoms —thus allowing ample time to demonstrate the organisms in the stools. If the case be old numerous leucocytes will be present as an expression of the chronic secondary suppurative process.

Bacillary dysentery.—In the acute stages, the elements composing the exudate are constant and afford criteria upon which judgment can be based in interpreting other intestinal exudates. WILLMORE and SHEARMAN summarized the characters of the bacillary dysentery exudate as follows:—

> " (1) Abundance of cellular exudate, mostly polymorphonuclear
>
> " (2) Preponderance of polymorphonuclears over mononuclears.
>
> " (3) Evidence of toxic necrosis of cells, the degenerative changes occurring early in all parts of the cell, including the nucleus This degeneration may go so far as to leave only the circular periplast of the cytoplasm, thus constituting the 'ghost cell,' the presence of which in any quantity is very typical of bacillary infection
>
> " (4) Evidence of phenomena characteristic of intense inflammatory reaction to microbic infection."

These points are well illustrated by the photographs in this paper. Faeculent condition of the stools is an indication of convalescence. Very many, on examination of mucus scraped off them, reveal pus and epithelium. Such case is not cured, even though the stool be scybalous, temperature normal and general condition extremely good. The key to the situation is held by the microscopist.

Amoebic dysentery. Here again WILLMORE and SHEARMAN summarize the characters of the exudate as:—

> " (1) Scantiness of cellular exudate, especially the polymorphonuclear element.
>
> " (2) Preponderance of mononuclears over polymorphonuclears
>
> " (3) Evidence of proteolytic digestion of cells, beginning at the periphery and affecting the nucleus last
>
> " (4) Absence of all phenomena characteristic of inflammatory reaction, toxic necrosis and consequent autolysis."

If a massive purulent exudate is present in bowel discharge that contains tissue dwelling forms of *E. histolytica,* it means one of three things:—

(1) A superimposed bacillary dysentery: search will then reveal ghost cells and other evidence of toxic necrosis. The bacillary process must first be treated and the amoebic only when all danger of giving emetine to a toxic subject has subsided.

(2) A profound bacterial invasion of amoebic ulcers in an old chronic case. Search will reveal no macrophages, ghost cells, or other evidence of bacillary process.

(3) A concomitant medical or surgical condition—tuberculosis, neoplasm, fistula, anal fissure, or broken down haemorrhoids.

This is the Law and the Prophets, that no diagnosis of amoebic dysentery should ever be made unless the microscopist has demonstrated the presence of the tissue dwelling forms of *E. histolytica* containing red blood corpuscles. Precystic or encysted forms alone present mean simply that the patient is a carrier, and may or may not at some future date develop dysentery or liver abscess. To the above picture of the exudate one feature should be added, first described by ANDERSON (1921) and here named *Anderson's phenomenon*: a clumping of erythrocytes in twos and twenties or more. It is extremely characteristic of exudates in the acute stages of the disease, and never seen by the authors in any condition other than amoebic dysentery. Charcot-Leyden crystals also suggest amoebic infection. Final judgment, however, should be based only on demonstration of the amoeba. Here, again, the photographs clearly illustrate the above essential points in the cytodiagnosis.

In *Balantidial dysentery* microscopic cytodiagnosis depends on finding the organism, and in noting the absence of ghost cells, macrophages and the other appearances so marked in bacillary dysentery. Epithelial cells are present. In any doubt, it is best to treat the case with antidysenteric serum, especially as there is no remedy of proved efficacy against balantidial infection.

Part III. *Treatment and Management of Dysentery, and the Post-Dysenteric State.* (Callender & Haughwout.)

MANSON (1914) wrote :—

> " As a rule . . . it is the sequelae of the disease that we have to fear rather than the disease itself. The chronic ulceration, the scarring, thickening and contraction of the gut are irremedial conditions which too often, after months or years of suffering, lead to intestinal obstruction or, very frequently, to atrophy of the glandular and absorbent system of the entire alimentary tract, general wasting and fatal asthenia "

The authors declare this an admirable thumbnail sketch of the pathology of the post-dysenteric gut. Dysentery is a disease of poverty. The mortality is always greater in Shiga than in Flexner cases. It is always very dangerous to young children and the debilitated. Nearly every case of dysentery leaves in its train ulcerative processes (the presence of which microscopic investigation of the stool will reveal by its cellular content), kept alive by organisms other than the one that initiated the trouble. Repeated examinations of stools should, therefore, be carried out for several weeks after the patient has been discharged from treatment. More and more is it evident that on *microscopist, not clinician, rests the final pronouncement of cure.* This is true for both bacillary and amoebic dysentery. The serum treatment of bacillary dysentery now ranks as therapy next only to diphtheria antitoxin. Like the latter, it must be administered as early as possible.

The treatment and dieting of bacillary and amoebic dysenteries are fully dealt with : the monograph concludes with an account, illustrated, of the microscopic evidence of post-dysenteric ulceration of the colon.

H. M. Hanschell.

MANIFOLD (J. A.). **Important Features in the Correct Diagnosis of Dysentery in India. (A Preliminary Note on Ten Months' Experience of Dysentery in Poona.)**—*Jl. Roy. Army Med. Corps.* 1926. Feb. Vol. 46. No. 2. pp. 81–98. [6 refs.]

(1) Of 573 cases of dysentery, 479 were protozoal, 16 bacillary, the rest unclassified. (Report on Health of Army in India 1922.)

(2) Of 318 dysenteries among British troops, 303 were protozoal, 6 bacillary, 9 unclassified.

Of 172 dysenteries among Indian troops, 151 were protozoal, 5 bacillary, 16 unclassified. (Southern Command Statistics for 1923.)

(3) CUNNINGHAM (1923) found 86 per cent. of dysenteries in jails of Eastern Bengal to be bacillary, and that the same proportion held for Moplah prisoners in the Madras Presidency. ACTON and KNOWLES found during 1920–23, in Calcutta, bacillary dysentery at least five times as common as amoebic.

After this telling introduction, Major Manifold continues: "The above three quotations illustrate well the discrepancy which exists between military reports and the views of experienced civil workers regarding the incidence of bacillary and amoebic dysentery in India." [*cf.* Major Knowles BONEY, below.] In these diseases correct treatment is impossible without correct diagnosis, and incorrect treatment results in damage to the walls of intestine, chronic ill-health and sometimes even death. The author's ten months' investigations in *Poona and district* has proved that *bacillary dysentery is extremely common and widespread, far more so than amoebic dysentery.* The prevailing idea was the reverse of this, due to the fact that medical officers in charge of laboratories are not yet trained to distinguish correctly between the different dysenteries. Workers on these diseases in various parts of the East, including India, such as WENYON, ACTON, KNOWLES, ANDERSON, CUNNINGHAM, MANSON-BAHR, have shown that bacillary and not amoebic is the preponderant type of dysentery.

1. Major Manifold gives an interesting account of his own investigations, with details of the methods to be pursued to arrive at an accurate diagnosis, and the organization of medical service in dealing with dysentery which will ensure prompt and accurate microscopical and bacteriological diagnosis. A point of practical value noted by the author is that in bacillary dysentery the stool is alkaline, in amoebic acid

He concludes that (1) In Poona, among the military population, the paucity of bacillary cases hitherto recorded is due to (*a*) many bacillary cases having been erroneously diagnosed as amoebic in origin; (*b*) owing to mildness of symptoms, many cases having been diagnosed as diarrhoea, colitis, etc., in lieu of dysentery.

2. These errors are due to (*a*) lack of recognition of the character and importance of the cellular exudate in bacillary dysentery, and the diagnosis of macrophage endothelial cells containing red blood cells as *E. histolytica*; (*b*) lack of co-operation between medical officers in charge of cases and laboratories.

3. As result, medical officers have believed most intestinal disorders to be due to *E. histolytica*, and emetine has thus played an unnecessarily prominent part in their treatment.

4. The remedy can be obtained by (*a*) increased co-operation between clinician and laboratory; (*b*) training medical officers in the preliminary precautions necessary to establish a correct diagnosis; (*c*) laboratory workers (comparatively unskilled) not accepting a cell as *E. histolytica*, from a case of *acute dysentery*, unless it contains red cells, and is actively motile; (*d*) the D.A.D.P. accepting no diagnosis from a subordinate until he has confirmed it himself.

H. M. H.

BONEY (Knowles). **Dysentery in Mesopotamia.** [Correspondence.]—*Brit. Med. Jl.* 1926. Feb. 13. p. 303.

The *B. M. J.*, in commenting on the "*Report on the Health of the Army, 1923,*" noted that it showed that nearly all the dysentery in

Iraq was amoebic, whereas in Egypt only 35 out of 64 cases were of that type, and that this bore out much of what had been previously recorded in connexion with the geographical distribution of amoebic and bacillary dysentery. The figures in the named Report were :—

	Total.	Amoebic.	Bacillary.
Iraq	207	181	?
Turkey	112	1	61
Egypt	64	35	29

Major Knowles Boney writes that in Iraq, during the War, of 250 consecutive acute dysenteries, in 51 per cent. the bacillus of dysentery was isolated; 26 per cent. only were amoebic. He cites WENYON and LEDINGHAM in support of his own 5 years' bacteriological experience in Iraq that the dysentery there, during that time, was predominantly bacillary. He concludes that, "a great change must have come over the etiology of Mesopotamian dysentery." [As relevant comment see abstract, above, of Major MANIFOLD's paper.]

H. M. H.

McROBERT (G. R.). **The Abuse of Emetine.**—*Indian Med. Gaz.* 1925. Dec. Vol. 60. No. 12. pp. 563–565.

The author states that in India the practice of "in diarrhoea try the effect of emetine," is almost as common as that of "in fever try the effect of quinine." One may entirely agree with him that the first practice is even more disastrous in its results than the second. He insists that emetine should be given only when the intestinal trouble is caused by *E. histolytica*. This cannot be established except by microscopic examination of fresh stools. Though in rural areas of India, under present conditions, diagnosis by microscopic investigation must often be impossible, there is no excuse for its omission in urban, civil, or in military practice. Emetine is a highly toxic drug, especially for the cardiac muscle, and should never be given to ambulatory patients. He enumerates briefly some of the bad results he has observed and attributes them to the unwarranted or careless use of this drug, and ends with the minatory statement that "The sword of Damocles, in the shape of a civil suit for damages . . . may very shortly dangle over those in India who treat dysentery without microscopic control, and sooner or later the fall is bound to come."

[This warning makes it all the more regrettable that full conviction of the truth of the author's thesis may not be carried to those of his readers with less experience of the harmfulness of the blind use of emetine; and this because of his omission of definite data for his and their judgment. More studies in detail of this important matter are needed.]

H. M. H.

DICKENS (P. F.). **A Two Years' Study of Dysentery in Haiti.**—*U.S. Nav. Med. Bull.* 1925. Dec. Vol. 23. No. 6. pp. 452–465. With 13 figs.

The majority of cases of dysentery in Haiti are of bacillary origin (Shiga type). Dysentery is endemic, and at times severe epidemics occur. The diagnosis requires a careful physical examination of the patient. Amoebic dysentery, tuberculous colitis, syphilis of rectum and the dysenteric type of intestinal malaria may all confuse the diagnosis. The Wasserman reaction helps but little, since 60 per cent. of the population give a positive serum reaction. Amoebic colitis is rare. Microscopical examination of the exudate from the bowel is the most reliable and most rapid method of diagnosing bacillary dysentery. The microscopical picture is characteristic—many pus cells and few red blood corpuscles. Endothelial cells, some vacuolated and so resembling amoebae, are present also. Arthritis was the most common complication encountered and occurred as often in those cases treated with salines alone as in the cases receiving serum. The poorly nourished and emaciated individual is prone to become infected. The spread of dysentery in institutions can be prevented by isolating patients; disinfecting all excreta, bedding and linen of patients; segregation of new arrivals for a period of eight days; daily disinfection of living quarters; allowing only healthy individuals to prepare or handle food for others; and by disinfecting latrines at regular and frequent intervals.

The best method of treating bacillary dysentery is by the combined use of an antiserum and salines, plus a good nutritious diet. The author believes that adding glucose to the dietary saved many of his cases.

H. M. H.

ESSED (W. F. R.). **Dysentery in the Toba-District.**—*Meded. Dienst. d. Volksgezondheid in Nederl.-Indië.* 1925. Pt. 3. pp. 324–342. With 1 map, 4 figs. & 6 charts. [3 refs.]

Bacillary dysentery did not reach the Toba plateau (Java) from the East Coast until 1920–21.

The author concludes, after his interesting research, that:—

1. Dysentery on the Toba plateau has two causes: (*a*) Amoebic, 13 per cent. of cases; and (*b*) bacillary. This last is due to Shiga-Kruse bacillus and is endemic.
2. The flying laboratory equipment was satisfactory: plates (Endo) could be made on the spot.
3. Balantidiasis was not found in man. It was found in pigs.
4. It is not necessary to treat the slight cases of Shiga dysentery with serum.
5. 57 per cent. of Shiga dysentery cases shown no fever: several cases had subnormal temperatures.
6. Isolation, and treatment, of dysentery patients proved efficient in lowering the endemical "apices." The medical service must keep an eye on these latter constantly.
7. Whereas the Shiga-Widal reaction is valueless for diagnosis at the sick-bed, it is, notwithstanding a few negative and doubtful results, very useful to the epidemiologist; especially so because isolation of Shiga bacillus from faeces fails in a great percentage of cases.

The author holds that cholera and typhoid form two extremes among "water-borne" diseases. Cholera occurs only epidemically, typhoid exclusively endemically. Typhoid "epidemics" are, in fact, but small rises of an "endemic": it is a more or less large number of strongly localized cases—barrack, hospital, school, army, where there is usually one source of infection. Between these two extremes are the bacillary dysenteries. Shiga dysentery is nearer to cholera, is more apt to cause epidemics, and seldom occurs sporadically. There are weak toxin formers, however, in dysentery [it is not clear if the author refers still to Shiga dysentery], and these are nearer to typhoid They cause endemics, sporadic cases, and are far less apt to give rise to epidemics Their so-called epidemics are strictly localized to prisons, asylums, etc, and as a rule there is but one source of infection

H M H

LUCAS-CHAMPIONNIÈRE (M S) Séquelles chirurgicales des entérites dysentériformes [**Surgical Sequelae of Dysentery.**]—*Bull Soc. Path Exot* 1925 Dec 9 Vol 18 No 10 pp 825–828

The author pleads for the systematic study of the opinions which he has somewhat indefinitely outlined in this ppaer, for which he does not claim the status of precise observations, but rather of impressions gained from his experiences in Dakar and Shanghai Late effects of dysentery are bowel disturbances often due to chronic dilatation of the colon, sometimes to ptosis of the transverse colon or, it may be, to chronic subacute peritonitis, more or less of stricture of the bowel may be found also He thinks post-dysenteric appendicitis not infrequent Its characters, revealed by operation, are (1) a large congested dilated caecum, (2) peritoneal fibrosis, with great frequency of Jackson's membrane (rare in Europe), (3) seldom a free appendix; rarer still normal and supple meso-appendix, extreme frequency of adhesion of appendix to the caecal wall He considers post-dysenteric lesions frequent causes of appendix infections

H M H

PANAYOTATOU (A) Trois cas d'entérite a *Trichomonas* guéris par le stovarsol [**Three Cases of Trichomonas Enteritis cured by Stovarsol.**]—*Bull Soc Path Exot* 1925 Oct 14 Vol 18. No 8 pp 647–651 [2 refs]

At the Greek Hospital, Alexandria, 1915–1921, the author in 790 stool examinations found amoebae in 59 per cent, and in 21 per cent. Trichomonas This parasite he considers to be undoubtedly a cause of serious and persistent diarrhoea, and in support quotes BRUMPT He states that Trichomonas is absent from the stools of healthy subjects who have had no previous diarrhoea He had examined stools from a large number of healthy subjects or from cases of diverse illnesses, not intestinal, and has never found the parasite MARCHOUX having reported the disappearance from stools of the cysts of amoeba, lamblia and blastocystis, after stovarsol use, the author tried this drug on 3 cases of Trichomonas infection No other protozoal parasites were found in their stools Cessation of symptoms and complete disappearance of the parasite followed on 7 to 10 days treatment with stovarsol by mouth

H M H

NINO (F L) [A proposito de un nuevo caso de colitis balantidiana en la Republica Argentina] [**A New Case of Balantidial Colitis in the Argentine Republic.**]—*Prensa Med Argentina* 1925 Vol 12 p 114 With 4 figs [Summarized in *Bull Inst Pasteur* 1925 Oct 31 Vol 23 No 20 p 901]

Clinical report of a case (the third known in the Argentine Republic) of balantidiasis The patient, a woman, had never been away from La

Boca, or been in contact with pigs She suffered from numerous muco-sanguineous stools, with fever showing evening exacerbations Besides the *Balantidium coli*, she had also infection with *Trichomonas hominis* and *Ascaris lumbricoides*

H M H

Rimpau Das Vorkommen der uebertragbaren Darmkrankheiten—Unterleibstyphus Paratyphus Ruhr—in Sudbayern in den Jahren 1913–1924 [**Transmissible Intestinal Diseases in S. Bavaria in 1913–1924.**]—*Muench Med Woch* 1925 Nov 13 Vol 72 No 46 pp 1964–1967 [3 refs]

An epidemiological statistical review of these illnesses during the period 1913–1924

H M H.

Donath (Julius) Die Yatren 105 Therapie der Amöbenruhr (Bemerkung zu C B Huppenbauers gleichnamigen Aufsatz in Nr 43 dieser Wochenschrift)—*Muench Med Woch* 1925 Nov 27 Vol 72 No 48 pp 2064–2065

Kawamura (Hideku) & **Tsuchiya** (Kinichiro) [On the Standardization of Dysenteric Serum Communication II Standard and its Testing Method or Dysenteric Serum]—*Saikingaku Zasshi* (*Jl of Bact*) 1925 Feb No 348 [Summarized in *Japan Med World* 1925 Nov 15 Vol 5 No 11 pp 322–323]

La Terza (Ermanno) Contributo alla terapia medica dell ascesso epatico tropicale —*Ann di Med Nav e Colon* 1925 Nov–Dec Year 31 Vol 2 No 5–6 pp 319 326 [1 ref]

Terzani (Alberto) Dell epatite amebica e della sua cura con l emetina —*Riv di Clin Med* 1925 Sept 15 Vol 26 No 17 pp 617–631 [10 refs]

TROPICAL DERMATOLOGY.

ALBERNAZ (Paulo Mangabeira). Considerações em torno do tratamento da " ulcera tropical " **[Treatment of Tropical Ulcers.]**—*Brazil Medico.* 1925. Sept. 5. Year 39. Vol. 2. No. 10. pp. 123–127. [64 refs.]

Various methods recommended for the treatment of " tropical ulcer " were applied by the author in the numerous cases under his care. Dusting with iodoform, applications of formol (40 per cent. formic aldehyde) and of its 10 per cent solution, methylene blue 5 per cent. in water, chromic acid 10 per cent., oil of chenopodium in glycerine or almond oil, neosalvarsan, all locally employed, and also the last named intravenously, gave varying results, but the best effects were brought about by Bismoluol, the commercial name of " acid bismuth tartrate of potassium." The ulcer is irrigated with hot water, the excess of fluid mopped up with sterile gauze, and the Bismoluol in powder dusted on. Much pain is caused, but disappears in 2–4 hours, and in 24 hours the surface is covered with a gelatinous mass. In 48 hours healing begins and cicatrization is rapid.

H. Harold Scott.

TERDSCHANIAN (A.). Ein Fall von Ulcus tropicum mit Neosalvarsaninjektionen und CuSO$_4$-Losung geheilt. **[Case of Tropical Ulcer healed by Neosalvarsan Injections and Copper Sulphate Solution.]**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Sept. 1. Vol. 29. No. 9. pp. 449–450. [3 refs.]

Report of a case in which the rapid healing of the sores is attributed to the local application of compresses of 10 per cent. copper sulphate solution, in association with 3 intravenous injections of neosalvarsan. The writer adds that he has obtained good results also with this solution in cases of ulcus molle.

W. Jenkins Oliver.

HIDAKA (Seiichi). **Keratoangioma punctatum symmetricum.**—*Jl. Oriental Med.* 1925. Mar. Vol. 3. No. 1. German summary pp. 30–31. With 3 figs. on 1 plate. [3 refs.] [In Japanese.]

Report concerning a peasant, aged 20 years, in whom the skin condition had been observed since early childhood. The greater part of the eruption was distributed symmetrically over the dorsal aspects of the hands and extensor surfaces of the wrists, with only a few scattered lesions on the distal parts of the forearms (both surfaces) and about the bases of the fingers on their dorsal aspects. The eruption consisted of numerous spots varying in size from milia to rice grains, sharply defined, slightly red in colour and hardly raised above the skin surface. They might be made to almost disappear by pressure, and only the larger lesions showed clinically slight hyperkeratosis. The microscopical picture did not present the same degree of hyperkeratosis or of capillary enlargement as is customary in angiokeratoma (Mibelli). The affection was stationary and caused no subjective symptoms. The patient appeared to be otherwise healthy.

W. J. O.

Hidaka (Seiichi). Ueber eine eigentuemliche Porokeratose: Porokeratosis vera. [**A Peculiar Form of Porokeratosis.**]—*Jl. Oriental Med.* 1925. Mar. Vol. 3. No. 1. German summary pp. 27–29. With 1 text fig. & 6 figs. on 2 plates. [8 refs.] [In Japanese.]

Report of a case showing horny plugs localized to the sweat duct orifices, occurring in a girl, aged 13 years, with diffuse scleroderma. The lesions, consisting of discrete flat or slightly raised miliary red papules, were distributed irregularly over the dorsal aspects and edges of both hands, the fingers, interdigital clefts and on both surfaces of the lower third of each forearm. A few isolated similar lesions were present on the palms and on the dorsal aspects of the feet. The horny central plugs, situated on the top of the papules and to be extracted with difficulty to leave small depressions were made up of numerous concentrically-arranged layers of cells. The hair follicles were entirely unaffected. Clinically, the appearance was that of Keratoderma punctatum symmetricum. The histological picture showed a mass of horny parakeratotic cells in lamellar arrangement, localized to the sweat duct pores, surrounded by flat epidermal cells containing keratohyalin granules. There was no increase of skin pigment and no cellular infiltration of the corium. The condition, therefore, must be distinguished from porokeratosis Mibelli.

W. J. O.

Leber (Alfred). Ueber den Pemphigus tropicus contagiosus und seine therapeutische Beeinflussbarkeit mit Stibenyl. [**Treatment of Pemphigus tropicus contagiosus by Stibenyl.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 203–207. With 2 figs. on 1 plate.

The irregular occurrence of the *Staphylococcus aureus* in the bullous lesions is against the assumption that this organism is the causative factor of the affection. A case is reported from Java concerning a planter in whom the disease had commenced on the left hand following, in his own opinion, infection from a dirty bridle. The general depression of the patient contradicted the supposition of a purely local infection. In addition to the lesions on the arm, there were bullae on the conjunctivae and on the forepart of the tongue. Examination of the contents of these lesions gave negative morphological and cultural results. The beneficial general effect of stibenyl observed in a previous case of ocular pemphigus suggested the trial of this drug in the case under examination. Two intravenous injections of 0·1 gm. and 0·3 gm. respectively of stibenyl, given on successive days, produced complete healing of the lesion in eight days, the tongue lesions being the last to show improvement. Only after the local lesions had healed was the subjective feeling of illness ameliorated.

W. J. O.

Dostrowsky (Arieh). Zum Wesen der "Harara." [**The Nature of "Harara."**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Sept. 1. Vol. 29. No. 9. pp. 443–449.

Is there one disease to be recognised as a clinical entity among the numerous skin diseases designated *Harara* (denoting heat) by the laity of Palestine? The writer would answer this question in the affirmative. The condition is most frequently seen among the newcomers to the country and chiefly in the summer months, May to September. It is observed to the greatest extent on the distal parts of the extremities on their dorsal aspects, being more sparsely distributed on the proximal parts, face, neck and upper part of the chest, the remainder of the body being uninvolved. The original lesions of varying size resemble those of strophulus, sometimes showing a vesicle with a red halo, but all the lesions rapidly become altered through scratching to give the appearance of impetigo or pyoderma. The vesicles contain numbers of eosinophile cells and are both microscopically and culturally sterile. A certain degree of immunity is apparently produced as only a few cases suffer in succeeding years: for this reason, perhaps, the disease is seen comparatively rarely among the adult settled population. The condition is to be regarded as an urticaria peculiar to warm countries. Two etiological factors suggest themselves: (1) The summer heat combined with the large number of sun rays; and (2) the numerous subtropical insects. The localization of the lesions more particularly suggests the bite of insects during sleep as the probable causative factor, and of such insects a Phlebotomus appears to be the most likely concerned.

W. J. O.

GUPTA (A.). " **Ecthyma " as a Menace against Small-Pox Vaccination.** —*Calcutta Med. Jl.* 1925. May. Vol. 20. No. 11. pp. 432–434.

This short article draws attention to an ecthymatous condition of the skin occurring frequently in Calcutta among infants and young children, associated with dirt and malnutrition, which skin affection precludes many cases from seeking vaccination. The general condition of such children must be treated and an iron tonic is advised. Local treatment consists in the application of a weak (1–2 per cent.) mercurial ointment or paste after removal of all crusts by fomentations, and by applying the following lotion, Zinci Sulphat. gr. iii, Cupri Sulphat. gr. ii, Aquae Camphorae (in distilled water) 1 oz.

W. J. O.

DELBANCO (Ernst). Zur Fox-Fordyceschen Krankheit. [**Fox-Fordyce Disease.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Oct. 15. Vol. 29. No. 10. pp. 538–546. With 3 text figs. [13 refs.]

A review of the literature concerning this affection draws attention to FISCHER's observation that no case has been recorded before the age of puberty, while practically all cases have occurred in women between the ages of 13–50 years. Two female cases are briefly reported. The discrete papular lesions are described with the grater-like appearance of the skin of the axillae, the loss of hair and the accompanying intolerable itching. The writer is in apparent agreement with FISCHER that the disease is an affection of the apocrine (holocrine) sweat glands of Schiefferdecker, which are described. Though the pathogenesis of this condition is not clear, the histological picture shows a blocking of the duct orifices and hair follicles by the altered epidermis and by the periglandular and perifollicular cellular infiltrations. The interdependence of the epidermal changes and the secretion (perhaps defective) of the physiologically active glands remains undetermined, while such factors together with a possibly toxic action of the secretion, retained within the blocked ducts, all combine to set up an apparent vicious circle.

W. J. O.

SCANLON (R. W.). **Accidental "Marking-Nut" Dermatitis.**—*Indian Med. Gaz.* 1925. Oct. Vol. 60. No. 10. p. 480.

Report of a case of dermatitis artefacta showing scattered papules and vesicles on the chest, probably from splashing, and an herpetiform vesicular eruption on the left arm from direct contact, commencing 4 days after a therapeutic application of the juice of the marking-nut to the scalp for ringworm.

W. J. O.

PANJA (Ganapati). **Lichen Spinulosus.**—*Indian Med. Gaz.* 1925. Oct. Vol. 60. No. 10. pp. 467–468. With 2 text figs.

The author reports that he has observed four cases of this skin condition and claims to have found fungi of the tinea group in scrapings from all the cases. [The diagram presented to show the appearance of the fungus elements is hardly convincing.]

W. J. O.

CHALON (G.). Un cas de maladie de Recklinghausen observé chez un arabe de l'annexe d'Ouargla (Sahara Constantinois). [**A Case of Recklinghausen's Disease seen in a Ouargla Arab.**]—*Arch. Inst. Pasteur d'Algérie.* 1925. Mar. Vol. 3. No. 1. pp. 22–27. With 2 text figs. [2 refs.]

Report concerning an Arab, aged 60 years, in whom the condition appeared to have been congenital. The tumours, mostly pedunculated, in size varying from a pin's head to a large pea, were generalized over the whole trunk, arms, face and scalp without any systematization or metamerization. Fewer lesions were present on the legs, while the palms and soles were free. Two large tumours, one pedunculated of the size of a fist and one sessile of the size of a mandarin orange, were situated about the left lumbar and left trochanteric regions respectively. According to the patient's statement all the tumours had ceased to grow for some years though none had disappeared. No tumours were palpably associated with any superficial nerves. Numerous chocolate brown macules were scattered irregularly and more especially over the trunk and upper limbs. There was no apparent alteration in the colour of the mucous membranes, no apparent deformity of the bones and no appreciable endocrine disturbance. Histological examination confirmed the diagnosis.

[The case is peculiar if the congenital origin of the tumours is to be believed.]

W. J. O.

RAU (P. Bhaskara). **A Simple Cure for Leucoderma.**—*Indian Med. Gaz.* 1925. Dec. Vol. 60. No. 12. pp. 578–579.

The writer has employed with success on two patches of leucoderma occurring on his own face and forearm the Ayurvedic prescription of yellow orpiment 1 part and seeds of *Psoralia corylifolia* 4 parts. These drugs are mixed together and finely powdered and cow's urine or pure drinking water is added in sufficient quantity to make a thick paste which is applied frequently to the depigmented areas. Under this treatment the patches completely disappeared in 14 days. The native names of the seeds are mentioned. A note by the editor gives the better known name of *Bouchi* seed.

W. J. O.

PAROUNAGIAN (Mihran B.). **Psoriasis in a Full-Blooded Negro.**—*Arch. Dermat. & Syph.* 1926. Jan. Vol. 13. No. 1. pp. 106–110. With 3 text figs. [9 refs.]

Case report of an American negro, aged 42, with a previous history of syphilis and with a positive Wassermann reaction, showing an extremely pruritic generalized squamous eruption with the lesions most marked on the extensor surfaces of the limbs and on the scalp and face. The clinical diagnosis of psoriasis was confirmed histologically. The condition cleared under an ammoniated mercury and tar ointment to recur within two months. A review of the literature concerning the occurrence of psoriasis in negroes is added.

W. J. O.

MAASS (Edgar). Beobachtungen ueber Ainhum. [**Observations on Ainhum.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Jan. 8. Vol. 30. No. 1. pp. 32–34. With 1 text fig.

Attention is drawn to the frequent familial occurrence of the disease, which affects as a rule the fifth toe, commencing on the plantar surface and between the toes. Some chronic inflammation probably paves the way, while there may be a peculiar tendency towards contractile scar formation in contrast to the propensity to keloid production so frequent among negroes. A case is reported in which both fourth toes were simultaneously affected. Amputation being refused, a deep longitudinal incision through the constricting bands improved the condition considerably.

W. J. O.

KENYA MEDICAL JOURNAL. 1925. June. Vol. 2. No. 3. pp. 88–89.—**East African Scabies.** [C. J. W.]

This short commentary is a plea for the determination of the causal parasite of the " commonly-named " scabies occurring in East African natives, and for the prescription of a routine line of treatment. The identification of the mite isolated from cases of West African craw-craw and described as indistinguishable morphologically from *Sarcoptes scabiei* is noted.

W. J. O.

i. MOUCHET (M.). Hydarthrose du genou gauche, voile apical droit; placards dyschromiques et analgésiques; absence du bacille de Hansen dans le mucus nasal et le suc ganglionnaire. [**Hydrarthrosis of Left Knee; Apical Shadow on Right Side; Discoloured and Analgesic Plaques; Hansen's Bacillus absent from Nasal Mucus and the Gland Juice.**]—*Bull. Soc. Path. Exot.* 1925. July 8. Vol. 18. No. 7. pp. 527–528.

ii. DELAMARE (G.) & ACHITOUV. Hyperkératose folliculaire ; hypochromie et atrophie épidermiques ; infiltration lymphoïde périfolliculaire et périvasculaire sans cellules géantes ; pas de bacilles acidorésistants ; microfilaires. [**Follicular Hyperkeratosis ; Epidermal Hypochromia and Atrophy ; Perifollicular and Perivascular Lymphoid Infiltration without Giant Cells ; Absence of Acid-fast Bacilli ; Microfilariae present.**]—*Ibid.* pp. 529–531.

i. Case report of a soldier whose clinical condition is summarized in the title of this short note. The skin lesions consisted of well-defined round or oval discoloured patches with a raised festooned border, without any palpable thickening, situated on the anterolateral and posterior surfaces of the body and on the postero-external aspect of the right arm.

ii. The histological picture of a portion of one of the skin lesions (from the arm) described in the above report is the subject of this communication, the title of which summarizes the main histological features. In addition the arterioles showed slight thickening of the external coat and the veins some occasional meso- and peri-phlebitis. The lymphatic channels were dilated and showed occasional partial obliteration of the lumen by endothelial overgrowth. The nerves appeared normal. Numerous microfilariae were observed in the subpapillary connective tissue, occurring singly or in groups of 2–4, about, but never within, the infiltrated lymphoid cellular masses, and entirely absent from the hypoderm. There was no evidence of leprosy. While the patchy discoloured lesions somewhat resembled the circumscribed dermatosis observed in dracontiasis, the absence of any local eosinophilia and the location of the microfilariae were factors against the hypothesis of a parasitic dermatitis. It is suggested that other cases of tuberculides and leprides among natives should be examined for the presence of microfilariae, and dermatoses associated with filariae searched for Koch's and Hansen's bacilli.

W. J. O.

LEVY (D. M.). Een geval van "Creeping disease." [**A Case of Creeping Disease.**]—*Nederl. Tijdschr. v. Geneesk.* 1925. July 25. 69th Year. 2nd Half. No. 4. pp. 479–481. With 1 plate.

Description of a case in a female child aged 2½ who, during her return from Netherlands India, developed a red spot in the right gluteal region, which crept onward at a rate of 3 cm. in 8 days, in a line with numerous windings, and left a red trace which gradually grew paler at the opposite end. There was much itching at the growing end. After this end was extirpated complete recovery occurred. In the extirpated tissue no parasite was found, although a burrow in the stratum granulosum seemed to indicate that it had been there.

An account of the habits of oestrid larvae ends the article.

N. H. Swellengrebel.

SCHAEFFER (W. F. Facee). Is de gastrophilus larve de verwekker van de Creeping Disease ? [**Is the Larva of Gastrophilus the Cause of Creeping Disease ?**]—*Nederl. Tijdschr. v. Geneesk.* 1925. Sept. 5. 69th Year. 2nd Half. No. 10. pp. 1115–1117.

Record of a case of creeping disease in a 3 years' old child in Balik Papan (Borneo), observed from the very first moment. The typical meandering red line started from a much itching vesicle on the right sole. An attempt was made to dislodge the supposed parasite by local refrigeration of the skin with ethyl chloride. In this way an acarine was recovered, which unfortunately was lost before it could be identified. After this the red line still continued to grow for a length of 1 cm. (the usual daily growth varying between 1–7 cm). Then it stopped, and recovery set in without any other treatment.

N. H. Swellengrebel.

Morishita (Kaoru) & Faust (Ernest Carroll). **Two New Cases of Human Creeping Disease (Gnathostomiasis) in China, with a Note on the Infection in Reservoir Hosts in the China Area.**—*Jl. Parasit.* 1925. Mar. Vol. 11. No. 3. pp. 158–162. With 2 plates. [11 refs.]

The authors record two new cases of creeping disease in man due to immature nematodes which they believe to be *Gnathostoma spinigerum*. This brings the total number of cases in man to seven—one due to *G. hispidum* (normally parasitic in pigs) and six to *G. spinigerum* (normally found in Carnivores).

T. W. M. Cameron.

Kirby-Smith (J. L.). **A Consideration of Creeping Eruption in the Southern States with an Entomological Report.**—*Southern Med. Jl.* 1925. June. Vol. 18. No. 6. pp. 402–409. With 4 text figs. [41 refs.]

During 14 years' practice as a dermatologist the author has had opportunity of seeing not less than 2,500 cases of creeping eruption, which is common in the south-eastern States of America during the rainy season. Its cause, notwithstanding much investigation, "remains unsolved." The cause, whatever it be, requires air, since in situations where a vacuum could be maintained for an hour or more the author was able in several instances to stop the eruption permanently; moreover, the local application of ethyl acetate (as recommended by Bishopp) under rubber tissue, or the plentiful application of collodion, brings about its disappearance in 24 hours.

The entomologist's report—after a reference to certain well-known reported cases from which fly larvae, variously identified as "Gastrophilus" or Hypoderma, or as *Wohlfahrtia vigil*, have been recovered—deals with a special investigation of more than 300 cases. At least 95 per cent. of them had a history of contact with damp sand, so that the "damp sand type of creeping eruption" is suggested as a fitting popular name for the condition as encountered in Florida. In 50 per cent. of the cases the damp sand was that above high water mark, where children play; other cases—and the most severe—were in plumbers laying pipes in moist sand. The most careful search has not, so far, revealed a parasite, though some sections of skin have still to be examined. It is thought, however, that the parasite may be identical with a worm 9 millim. long and 1 millim. broad removed from a linear papule by Mood, of S. Carolina. The description of that worm "is said to have corresponded to that given by Tamura in which a similar parasite was identified as *Gnathostoma siamense*." [Gnathostoma is a synonym of a genus of Nematode worms.]

In the discussion on the paper the commonness of the eruption in the south-eastern States was generally confirmed and several speakers corroborated the history of its origin in damp sand or damp and polluted soil. Among the remedies confidently recommended, besides ethyl acetate, were freezing with hydrochloric ether, beating followed by application of collodion, and high frequency sparking along the track of the parasite.

A. Alcock.

CORRIGAN (S. Harvey) & CORRIGAN (Cecil Edwin). **Three Cases of Creeping Myiasis in Saskatchewan.**—*Canadian Med. Assoc. Jl.* 1925. Apr. Vol. 15. No. 4. pp. 403–404. With 1 text fig.

The three cases occurred in men working with horses. The patients complained only of local irritation. Only in one case was a maggot found, and it was identified, by Professor CAMERON, of the Zoology Department of the University of Saskatchewan, as either first or second stage of *Gastrophilus intestinalis.*

A. A.

BLANCHARD & LAIGRET Deux cas de "larbisch" observés sur des Européens à Brazzaville [**Two Cases of "Larbish" in Europeans at Brazzaville.**]—*Ann de Méd et de Pharm Colon.* 1924 Sept—Oct.—Nov—Dec. Vol 22. No. 3 pp. 414–415.

Two more cases of "creeping pseudomyiasis" in which no cause could be discovered.

A. A.

POMEROY (J. K.). **Case of Larva Migrans.**—*Canadian Med Assoc. Jl.* 1925. Dec. Vol. 15. No. 12 p. 1249. With 1 text fig.

The patient in this case was accustomed to lie prone when weeding her garden, and the inflammatory wheal meandered about the navel Ethyl chloride "apparently killed the larva"—which, however, escaped detection.

A. A.

GAMMEL (J. A.), MISKDJIAN (Hagope) & THATCHER (Harvey S.). **Madura Foot (Mycetoma). The Black Grain Variety in a Native American.**—*Arch. Dermat. & Syph.* 1926. Jan. Vol. 13. No. 1. pp. 66–76. With 6 text figs. [14 refs.]

Case report concerning a Mexican, aged 26 years, accustomed to go barefooted when engaged in farm work, in whom, 5 years previous to his coming under observation, the disease had commenced as "a limited swelling in the middle of the plantar surface of the left foot." Only during the last few months had the swelling spread to affect also the dorsal aspect of the foot. Small black spots were found on the sole from which black grains could be expressed. Radiological examination revealed no bone involvement. Histologically the granuloma showed the majority of the granules, with three differently pigmented zones, to be situated in the deeper layers of the corium. There was some slight atrophy of the sweat glands. In making the biopsy no involvement of the muscles was observed. The biological and cultural characters of the organism are briefly noted. Concerning the latter "the most striking feature is the formation of brown pigment on carbohydrate mediums." The fungus was identified as belonging to the genus *Madurella* (Brumpt), while the species did not resemble any previously described, and was therefore designated *Madurella americana*. Inoculation experiments into animals were all negative.

W. J. O.

FRAZIER (Chester N.). **Hongkong Foot.**—*China Med. Jl.* 1925. Aug. Vol. 39. No. 8. pp. 705–711. [18 refs.]

The disease is a mycotic infection of the feet occurring especially in the summer months and appears: (1) As deep-seated vesicles about the inner margin of the hollow of the sole, and on or between the toes at their proximal extremities; (2) as a macerated condition of the skin of the interdigital clefts and of the contiguous surface area. A persistent and intolerable itching is a marked feature. The nails may show infection, as also may the hands. While no systematic study of the moulds has been made, DOLD, in 1919, identified the fungus from 14 cases as resembling the *Epidermophyton inguinale* (Sabouraud). The application of a formaldehyde salicylic acid lotion 2–3 times weekly is advocated as a preventive measure:—

Liq. formaldehyde (40 per cent.)	3–6
Ac. salicylic	3–6
Alcohol (sufficient to make a solution) ...	30
Water	30

For treatment, Whitfield's ointment is recommended.

W. J. O.

CHAVARRÍA (A. Peña) & SHIPLEY (Paul G.). Beitrag zur Kenntnis der "Carate"-Arten des tropischen Amerika. [**Carate of Tropical America and its Varieties.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Oct. 15. Vol. 29. No 10. pp. 605–609.

A review giving a very comprehensive survey of the disease. The authors dispute the occurrence of fever and diarrhoea in the early stages of the affection. Eosinophilia (10–12 per cent.) is a constant feature even in the absence of worms. While the spores may be introduced mechanically by any biting insect the occurrence of the disease is striking in those districts where Simuliidae are in particular preponderance. The cultural characteristics of the fungi (excepting from cases of blue carate) are briefly mentioned. All these moulds are peculiarly resistant to the action of ultraviolet rays which may thus be employed to disinfect the skin before undertaking any cultural investigation of the scales. In contrast to other dermatomycoses the horny layers of the epidermis are free of fungus. Early cases are best treated by the external application of tincture of iodine, older cases by intravenous injection of arsenobenzol and oral administration of arsenic together with external cleaning by soap and water and the application of a 2 per cent. calomel+1 per cent. salicylic acid ointment.

W. J. O.

VILLAIN (G.). Le tokelau (*Tinea imbricata*) dans la province chinoise du Honan. [**Tokelau in the Province of Honan, China.**]—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 618–622. With 1 text fig. [5 refs.]

Case report concerning a man showing the affection, of 3 years' duration, mainly on the gluteal region, with a few concentric ringed scaly lesions on the arms. Microscopical examination of the scales showed a fungus resembling the Endodermophyton. The case is of interest in its geographical occurrence.

W. J. O.

CASTELLANI (Aldo). **Further Observations on Pruritus Ani and Pruritus Vulvae of Mycotic Origin.**—*Jl. Trop. Med. & Hyg.* 1925. Sept. 15. Vol. 28. No. 18. pp. 329–332. [3 refs.]

Over 20 per cent. of the author's cases systematically examined since 1912 have shown the presence of fungi, mostly of the *Epidermophyton* genus; occasionally a *Trichophyton* has been found. *Monilia* occurs probably as a secondary contamination. Minute, red, raised, slightly infiltrated patches of skin suggest a mycotic infection, especially with an accompanying history of tinea cruris or pedum. Any associated eczematous condition renders the treatment difficult, uncomplicated cases being most successfully treated with Deek's ointment or with sulphur praecipitata and salicylic acid aa.gr. 15–20 in 1 ounce of vaseline.

W. J. O.

REVIEWS AND NOTICES.

LEAGUE OF NATIONS **Health Organisation. Malaria Commission. Report on its Tour of Investigation in Certain European Countries in 1924.**—195 pp With 2 maps, 20 figs & 4 charts C H 273. Geneva: 1925. Mar 26

The members of the Health Committee of the League of Nations, together with experts, correspondents and secretaries, toured, during 1924, in the Kingdom of the Serbs, Croats and Slovenes, in Greece, Bulgaria, Roumania, Russia and Italy They have issued their summarized impressions of the tour and detailed reports, from one to four, on each country visited

Malaria, it is emphasized is becoming recognized as a social disease, influenced for good or ill by proved measures of social hygiene—notably by good housing and feeding So definitely is this so that the major bonifications of Italy are not considered as essentially antilarval in their effects—for quite cursory examinations of drainage canals shows the frequent presence of larvae—but as benefiting the country through the intensive use of the new rich land, through better feeding that is, and better housing, for, although perhaps it is not generally recognized, bonification is not held complete by the Italians until, to the immediate and intensive culture of the reclaimed lands, is added sanitary housing

The question of the house is indeed held in this report to be of quite primary importance It is there that infection is nearly always acquired, and there that the anopheles must be attacked Screening is not advised until those for whom it is provided can be relied upon to use and not abuse it, but the "overwhelming importance of destroying domestic mosquitoes" is urged, the procedure being cited as probably "the simplest most direct and perhaps also the easiest and least costly method" of attack, but one for whose success "the force of an enlightened public opinion is a necessity ' Spraying fumigation hand trapping and swatting are suggested, and indeed the primitive destructiveness of children has been enrolled in popularizing the last

Following the inspiration of the Punjab, epidemic is sharply distinguished from endemic malaria and in the production of epidemicity the interchange of strains of plasmodia is held to be a factor of primary importance and one not hitherto sufficiently stressed This interchange of strains has been produced by civilian mass movements such as the influx of refugees into Thrace and Macedonia the vast movements induced by famine and pestilence in Russia in 1921–1922, and, of course, by soldiers returning after the Great War

In view of the extent to which treatment has to be delegated to lay and subordinate personnel the Commission advises that each country should select and recommend a suitable "Standard Treatment," mainly, perhaps, as an intimation of the necessity for continued treatment For children, 2* cgm per kilo per day is suggested Regarding antilarval measures the futility is expressed of dealing expensively with large bodies of water, while the minor collections, often more dangerous, are neglected But, lest it be thought that large engineering schemes are deprecated, the Commission's deliberate pronouncement is that these are required in many areas to get the best out of the country, and to improve comfort and economic status, but that since they cannot be expected of themselves to effect an immediate change in malarial incidence, they must in general wait on finance

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* In the English Version the figure given is 20. In the French the word "deux' is used which is obviously correct.

Clayton Lane

BONNE (C.) & BONNE-WEPSTER (J.). [Edited with the Assistance of: "De Vereeniging tot bevordering der geneeskundige Wetenschappen in Nederlandsch-Indie."] **Mosquitoes of Surinam. A Study of Neotropical Mosquitoes.**—*Koninklijke Vereeniging het Koloniaal Instituut te Amsterdam. Meded. No. 21. Afdeeling Trop Hyg.* No. 13. 558 pp. With 84 figs. 1925. Uitgave van het Instituut, Druk De Bussy, Amsterdam. [Price f.10, or $4.]

This useful work embraces not only the Culicinae (i.e., the true mosquitoes with elongate beak) of Surinam, but also those known to exist in other parts of tropical America, including the Antilles, but excluding Mexico.

The authors adopt the DYAR and KNAB classification, based mainly on the structural characters of the hypopygium of the male and on characters shown in the larval stage. They recognize, however, that this scheme has its weak points. Above all, they do not make the common mistake of running a good thing to wasteful and ridiculous excess, but realize that this particular male organ has not the invariable exactitude of a specific geometrical figure, and that too much fuss may be made of the little individual differences that may occur in it. Again, they recognize that tables of genera and species constructed for the use of specialists dealing with large collections, and having leisure for making suitable preparations of a discriminative organ of the male, may not be very convenient for the ordinary man who, nine cases out of ten, catches the obtrusive and aggressive female; and so, where necessary, they supply alternative tables, based on obvious superficial differences, for the identification of genera and species. Their specific descriptions are concise and where possible include the adult of both sexes, the larva, the pupa, and the egg, and also the breeding-places; but, of course, this entire completeness is not always possible. As a minor, but significant, point, although—along with a full description of the yellow fever mosquito and some pertinent remarks on its habits, etc.—they render to this insect the appropriate scientific name, *Aëdes* (*Stegomyia*) *aegypti*, they are perfectly tolerant of its other name, "largely used in medical and popular literature," *Stegomyia fasciata.*

A. Alcock.

FOX (Carroll). [M.D., Surgeon, U.S. Public Health Service, etc.] **Insects and Disease of Man.**—pp. xii+349. With 92 illustrations. 1925. London: H. K. Lewis & Co. Ltd. [Price 18s. net.]

It is difficult to criticize this compilation, since it is difficult to realize for what class of readers, or learners, or workers it is intended.

Although its title-page does not indicate the fact, it is unquestionably a treatise on Medical Entomology, since 220 of its 328 pages are definitely arranged in 22 chapters under that main heading, the preface states its alternative object to be the selection of the material required by the student of that subject, and its opening paragraph defines its scope as medical entomology without any qualification.

Now it must be admitted that the term "medical entomology" is not a very good one, owing, no doubt, to the fact that the term "medical" is itself a loose one, being applied now to the science and art, now to the students and practitioners of the art, now to the field of treatment, and now to the equipment used in treatment. Still, the term medical entomology is sanctioned by use, and everyone now knows what ought to be included under it; and no medical man at the present time can be expected to be satisfied with a survey of medical entomology which takes no notice of a multitude of venomous arthropods, and no notice of the insect fauna of provisions and store-houses, of waterworks, of sewage, septic tanks, etc., all of which—besides, in tropical countries, the insect fauna of habitations, etc.—are likely at any moment to engage the attention of the medical officer who has public health duties, whether in the military or civil services, particularly if, as so often is the case, he be isolated and thrown upon his own resources

The present volume restricts its vision to four orders of insects—flies, fleas, bugs, and lice—and one order of Arachnida—the mites and ticks,—and to the diseases for which they severally are responsible, it notices the domestic cockroaches, and glances at Cyclops in one of its pathogenous aspects; and takes its limited survey from two distinct points of view, first the entomological, and then the pathogenous or "medical"

The entomological results show an astonishing lack of proportion and discretion, descriptive matter of poor and often trivial elementary quality alternating with prodigious synoptical tables of genera and species which no one but a specialist in the particular group could utilize, or, perhaps, with a technical description of the details of structure of the Muscid head which no one but a dipterist could apprehend When one finds 37 feeble lines given to the tsetse flies, 11 lines to Dermatobia, and 6 lines each to Cordylobia and Auchmeromyia, and then turns to 5 pages of small type occupied by a key to the genera and species of North American blue-bottles, 9½ similar pages to a key to the genera of fleas, and 4½ similar pages to a key to the species of Sarcophaga occurring in the U S A —these being flies that even the long-experienced dipterist finds insuperable difficulties in distinguishing from one another—one may be pardoned for expressing the opinion that it is the inessential that predominates in this—the main—part of the book if it be intended for the use of medical men

Some of the general statements are marvels of inept inexactitude, *e g*, that the members of the Arthropod phylum are "invertebrates having paired jointed appendages to the segments of the head, thorax, and sometimes the abdomen ', or of puerile insignificance, *e g*, that in the Class Insecta ' there is no osseous system " " there is no lung or gill " Surely, there needs no medical entomology to teach us that Queen Mab's whip of cricket's bone is but poetic fancy

The medical part of the book is of far better quality the author evidently being here on surer ground One considerable mis statement must be noticed namely that only two species of Glossina, namely, *palpalis* and *morsitans* are concerned in African trypanosomiasis, and one considerable omission namely the history of the ribbon worm in Cyclops and Diaptomus And surely both Leishmania and Porocephalus should have come in somewhere in the volume

The book must be allowed to be well printed and well got up, and to have some good illustrations

A Alcock.

ROBINSON (L E) [Ph D (Cantab), A R C Sc (Lond)] **The Genus Amblyomma. Being Part IV commencing Vol. II of Ticks: A Monograph of the Ixodoidea** by NUTTALL (George H F), WARBURTON (C) & ROBINSON (L E)—pp xii+302 With 7 plates & 130 figs 1926 Cambridge. University Press [Price 20s net]

This fine monograph deals in a masterly manner with the largest and one of the most widely distributed of all the genera of ticks As the very instructive Introduction informs us about half its species are American, and the rest are distributed in Africa, Asia, Australia, and the islands of the Pacific, a single outlying species occurring in Europe (Spain) —the whole being embraced within the 40th parallels of latitude The range of hosts is also remarkably extensive, including Amphibia (a toad), Reptilia (lizards, snakes and tortoises), Birds—which are attractive to the larvae and nymphs rather than to the adults—and most orders of land Mammals, but particularly Ungulates A unique instance has been recorded by NEUMANN of an *Amblyomma variegatum* attached to a slug The genus is of some considerable importance to the veterinary profession, particularly in Africa, but is not so far as man is concerned of much pathogenous import, *A. maculatum* is said to be one of the transmitters of the virus of Rocky Mountain Fever, and the larvae of *A. cajennense* are said to be, at certain seasons, in tropical America and the West Indies, a troublesome pest—as indeed, Ixodid larvae of all kinds are in tropical countries. On the other hand, the author quotes an interesting use that the Indians of Rio Negro make of *A. maculatum* as an application to an inflamed corn, in place of a leech.

The descriptions of the species are models of comprehensiveness, conciseness, and point. In each instance—except in the rare cases where available material is deficient—there is a pungent diagnosis and a critical description of both male and female, and a compact statement of the geographical distribution and hosts to which is added in a sufficient majority of instances a group of figures illustrating the distinctive features of the species. Besides these adroit descriptions and text figures, the student has to guide him workmanlike analytical keys to the species, in both sexes, and also some beautiful plates. In supplement there are a classified list of hosts, a tabular statement of the geographical distribution of the species, a bibliography, and some useful and discreet notes on biology, which last are a striking contrast to the bald disjointed chat so often found in monographs upon those villainous forms of life that come betwixt the wind and man's fortunes. These notes on biology are placed, rather unfortunately, after the index.

A. Alcock

BUREAU OF HYGIENE AND TROPICAL DISEASES

TROPICAL DISEASES BULLETIN.

Vol. 23.] 1926. [No. 6.

SLEEPING SICKNESS.

DUKE (Lyndhurst). **A Discussion on** *Trypanosoma rhodesiense.*—*Parasitology.* 1926. Jan. Vol. 18. No. 1. pp. 67–73. [2 refs.]

The author writes that BRUMPT has done him good service by criticizing certain of his views on the epidemiology of sleeping sickness; he says that some of BRUMPT's criticisms are unanswerable, others can be met, and still others rest upon a misunderstanding of his various contributions on the affinities of the polymorphic trypanosomes.

In this article Duke attempts to meet some of BRUMPT's criticisms and to remove certain misconceptions for which he does not desire to be held responsible. He takes in turn the formal conclusions in BRUMPT's paper [this *Bulletin*, Vol. 21, p. 748] and considers the evidence and inferences brought forward in their support.

Conclusion I. That *T. rhodesiense* is a good species.

Duke is unable to accept BRUMPT's reasoning based on the figures obtained from the epidemic of *rhodesiense* in the Mwanza area on the one hand, and TAUTE and HUBER's human inoculation with nagana on the other, from which it was concluded that *T. rhodesiense* and *T. brucei* are different species. According to Duke's view, the stimulus necessary to induce *T. brucei* to cultivate man as a host was lacking in TAUTE's experiments.

In the Mwanza area conditions were quite different. A serious famine, influenza, and ankylostomiasis had paved the way for a reduction of the game and thrown the man-loving *G. swynnertoni* into extremely close contact with a debilitated native population. Duke's contention is that the famine and influenza, aided no doubt by ankylostomiasis, paved the way for *T. brucei* to obtain a footing in man, and that these debilitating influences were intimately associated with an increased attack on man by hungry tsetses, whose normal food supply —the wild game—had been greatly reduced by indiscriminate hunting.

The great receptivity of man at the time of Duke's visit two years later was due to the adjustment of the parasite to man during the interim. By this time the trypanosome had become thoroughly humanized, possibly even to the extent of becoming cyclically transmissible from man to man by tsetse.

Conclusion 2. Classification of trypanosomes ought to be based on all their characters, both morphological and biological.

Duke agrees to this, but considers that in the case of *T. brucei* and *T. rhodesiense* the balance of the "ensemble" of all biological (morphological and physiological) characters favours the conclusion that the two are only strains of varieties of a single species.

Conclusion 3. The natural immunity of certain species of hosts to natural infection is a character of great value, and constitutes in the absence of others an excellent criterion for distinguishing certain species.

Duke thinks that the little we know on this point does not justify an employment of this test as a criterion of species.

Conclusion 4. It seems to Brumpt difficult to admit of the existence of rapid biological transformation of trypanosomes in Africa within a few years.

This, as Duke says, is merely a statement of opinion, and as a matter of fact such biological transformations as those postulated have actually been witnessed in his laboratory in the course of a few years.

Conclusion 5. The mechanical transmission of the trypanosome of man in Africa does not afford explanation of the gravity of certain epidemics, a gravity which depends in part, as in the case of diseases not transmitted by intermediate hosts, on certain factors which constitute for ancient authors the "génie épidémique," which we are still incapable of actually determining, and, in part, on the absence of immunity in populations newly subject to infection.

Duke considers that direct transmission does afford an explanation —not necessarily a correct one—of the gravity of certain epidemics, and that his explanation serves as a useful working hypothesis.

Conclusion 6. In this Brumpt states that much remains to be done and with this Duke agrees.

[It is impossible in a short summary to do justice to this very interesting paper, which should be consulted in the original.]

W. Yorke.

Carpenter (G. D. Hale). **Report by the Senior Medical Officer i/c Sleeping Sickness for 1924.**—*Uganda Ann. Med. & San. Rep. for Year ended* 31*st Dec.*, *1924.* pp. 70–76. With 1 fig.

The author reports that during the early part of the year he visited Gulu, in May Central Kavirondo, in July Buvuma Island, in September and October Lake Albert and the Busoga Coast, and in November and December the Eastern Province.

As a result of his observations, he states that generally speaking sleeping sickness is under control, but that much remains to be done in the Northern Province to which an additional sleeping sickness medical officer has now been appointed. A brief reference is made to the treatment of natives by "Bayer 205" and tryparsamide; favourable results were apparently obtained with both drugs.

Carpenter considers the increased movement of labour is liable to result in spreading sleeping sickness, particularly in the case of recruits from Gulu and Chua. It seems inevitable that sooner or later an infected native from the Northern Province will come into contact with *Glossina palpalis* on Lake Victoria, and it is therefore of the utmost importance that clearings be adequately maintained and extreme care be taken by patrolling Lake Victoria that no fisherman escapes a biennial examination, so that no infective person comes into contact with a fly at places where there are no clearings. So far as is known *Glossina morsitans* is still uninfected with human trypanosomes.

There follow a few remarks on the position in each infected area. In the Victoria Nyanza area, the whole situation requires close examination; there is no doubt that restrictions have been relaxed to the limit of safety, and that while no cases of sleeping sickness have yet been detected among the repatriated inhabitants, it must be expected that infection will be introduced from other parts of Uganda or from Kavirondo. Although sleeping sickness is at present quiescent in Kavirondo it is yet a constant danger to Uganda, as fishermen from Kavirondo constantly make use of Uganda waters and probably bring fish to Jinja.

Carpenter believes that Kenya should introduce some system of control of fishermen similar to that in Uganda; unless this is done there is every probability that infection will spread from Kavirondo to Buvuma and thence to other islands.

It has not been possible to visit the Victoria Nile area during the year, nor has a complete tour of the Mpologoma area been possible, but the situation was discussed with the District Commissioners; only four deaths are known to have occurred from sleeping sickness during 1924, among the 10,034 people near the swamp. The population is thinly distributed and it is proposed to issue instructions to concentrate those actually within the boundary of the infected area.

Since the Siroko Valley area was last visited in 1921, considerable developments have taken place; the area under cultivation has increased enormously and there is now a ginnery on the Siroko river. In November the area was visited and the people called for examination; no case of sleeping sickness was discovered.

Carpenter was unable to visit Katwe and Bwamba area this tour. The parts of the coast of Lake Albert in the Bunyoro area, which were opened for repopulation in 1922, were re-examined in September. The results, which are given in a table, show that three cases of sleeping sickness were found amongst 1,280 persons examined. It was not found possible to visit the Nile infected area. Returns by Chiefs persistently gave no deaths from sleeping sickness, but it is doubtful if this represents the true state of affairs. The area has not been visited since 1922; people are very afraid of gland puncture and until a medical officer is appointed, who can work regularly in the sleeping sickness area and obtain their confidence, no progress can be made.

The Acholi, East Madi, and West Madi areas of the Gulu district were thoroughly examined in January and February. The people in the Acholi area were very reluctant to come up for examination. In certain places it was decided to remove the population away from contact with *G. palpalis*. There seemed reason to hope that practically all the deaths which occurred in 1924 were due to infection contracted before the movement took place, and that the disease will now actually die out in the Acholi area. In the East and West Madi areas the number of people attending for examination was much smaller than in 1921, but so far as the figures go they are encouraging. The disease has apparently diminished in East Madi from 94 to 76 per 10,000 and in West Madi from 65 to 16 per 10,000.

A complete tour of the Chua district was made during February. In 1922 the author had pointed out that the only cases of sleeping sickness in Chua were on the Chua-Gulu border, and it was strongly urged that a thorough clearing of all crossings and watering places was vital if the onset of the disease was to be checked. Unfortunately, this has not been efficiently done and this year it was found that the infection had spread.

W. Y.

BEVEN (J. O.). **Note on a Trypanosomiasis Census of the Populations on the Miriu River, Central and South Kavirondo Districts, Nyanza Province.**—*Kenya Med. Jl.* 1925. Dec. Vol. 2. No. 9. pp. 251–254.

Miriu forms the boundary between Central and South Kavirondo, and the population affected can be divided into three groups; two on the South Bank and one on the North.

Group A. The Kabuya Clan lives on the South Bank and its nearest villages are about three-quarters of a mile from the river. This clan obtains its water from a ford at which the fly density was less than 5 p.b.h. It largely engages in fishing in reaches where the density varies from 5 to 20 p.b.h. and infested bush was constantly visited for purposes of cutting poles, etc. In short, the degree of contact between the population and the fly can be described as very close, although the population lived well over a mile from heavily infested bush. Of 764 persons examined in 56 villages, 407 (53 per cent.) were found to be suffering from sleeping sickness. Beven remarks that about 50 per cent. of these cases were treated prior to his arrival in the district, the patient receiving from one or two to as many as thirty injections, and he adds: "it is very unfortunate that no record was left of the treatment given or of clinical findings, as all subsequent work on these cases is, therefore, rendered incomplete." [It is really lamentable how often one meets with this sort of thing in the literature, and it is high time that the therapeutic work in this disease was put on a proper footing and arrangements made to ensure that cases treated are properly recorded and their subsequent history observed.]

Group B. The Kabala Clan also lives on the South Bank, but below the fly belt. The majority of the villages obtain their waters from the lake or ponds, or from a ford below the limit of the fly. The inhabitants of the villages closest to the river do, however, to a small extent frequent infested reaches and a census of these should be made.

Group C. The Nyakach Villages are on the North Bank of the river, and here again only a proportion of the population use the river. Of 1,173 persons examined in 78 villages, 344 (29·2 per cent.) were found to be suffering from the disease.

The author remarks that at first sight the high incidence revealed by these figures, which are based on clinical and not on microscopical examination, makes one doubt the accuracy of the diagnosis, but closer enquiries into the facts in local conditions disperse this doubt. The incidence of the disease among children under sixteen is very high. It is lower among adult males and very low among women and old people of either sex. Beven believes this to be due to the fact that the children spend the greater part of the day either actually fishing on the river or in the adjacent bush herding stock. Some account of the clinical symptoms is given and it is also mentioned that the rapid improvement of cases treated by "Bayer 205" or tryparsamide supports the diagnosis. It is very remarkable how little disturbance the disease causes in some cases for considerable periods. Trypanosomiasis never completely died out in the area after the epidemic of 1909–1912. Beven believes that the population has acquired a degree of relative immunity or that the strain of trypanosomes concerned has been in some way modified in virulence ; he remarks on the scarcity of trypanosomes in the blood and gland juice of these cases and adds that the whole picture seems to resemble very closely that reported by Macfie in Eket.

W. Y.

Davey (John B.). **The Sleeping Sickness Outbreak in Mwanza District.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Nov. 19 & Dec. 17. Vol. 19. Nos. 5 & 6. pp. 336–338. [4 refs.]

This paper is a rejoinder to one by Swynnerton [see this *Bulletin*, Vol. 20, pp. 311 ; Vol. 21, p. 748 ; and Vol. 23, p. 50]. In his previous paper Davey had strongly expressed the opinion that Swynnerton's contentions could not be accepted. These were (1) that the proposed experiment in game destruction has for practical purposes been carried out in Mwanza District, and that we know the result ; and (2) that the fly was driven, by scarcity of game, to feed on man.

Fortunately, the long-desired experiment of game destruction has now been carried out and details are published in the *Rhodesian Agricultural Journal*, Vol. 20, Nos. 2, 3 and 6, 1923. [*loc. cit.* Vol. 21, pp. 149 and 435.] This fact relieves Davey of the necessity of replying in detail to Swynnerton's last communication. Regarding the facts brought out by the experiment, Jack expresses himself most definitely, time and again, as for example :—

"The observations recorded here are altogether confirmatory of the assertion of the early hunters and explorers that where the game is ruthlessly hunted, the fly tends gradually to disappear." Again—"It would be difficult under the conditions of this experiment to imagine anything more convincing in regard to the effect of removing the game than the position in regard to tsetse fly and game since and including the dry season of 1921 . . . The general tendency of the fly areas throughout the territory, during the experiments, has been progressive ; advances, sometimes associated with the death of native cattle in formerly healthy areas, having been recorded in many parts."

With regard to the suggestion that game destruction might result in *G. morsitans* tending to concentrate on human beings, and thus increase the danger of epidemics of sleeping sickness, Jack says :—

"In point of fact, the fly disappeared most rapidly in the vicinity of the camps, although these were all situated in favourable country for the insect" ; and Davey compares this statement with Swynnerton's, viz. : "As regards the likelihood that the presence of game protects man against trypanosomiasis, one can merely repeat that its removal does, definitely, have the effect of concentrating the tsetse to a greater extent on man, and that such concentration seems bound to facilitate the course of an epidemic or the conversion of sporadic cases into an epidemic."

In Jack's account of what Swynnerton himself describes as an "excellently organized experiment", "we have the facts of the crucial experiment which have been awaited for years to give a lead to policy. It provides a complete refutation of the theoretical objections to game destruction" advanced by Swynnerton.

It remains to act upon the facts elicited by the Rhodesian experiment. Nobody has suggested that throughout the tsetse area of Africa paid hunters should be employed to exterminate the game as was done in the Rhodesian experiment ; the idea is too fantastic to call for remark, were it not that the supporters of game preservation impute this policy to those who inculcate the game.

In Tanganyika tens of thousands of natives are only awaiting to do it gratis, with the object of protecting their crops from the ravages of game and of supplementing their own dietary.

Davey concludes as follows :—

> "That it would take a considerable time for them to restore that balance of Nature, particularly as between primitive man and beast, which the restrictions on hunting during the past twenty or thirty years have disturbed with such serious results, cannot be doubted. But that it would be accomplished and results achieved, approximating to those attained in the Rhodesian experiment, I feel sure."

W. Y.

JAMOT (E.). La maladie du sommeil au Cameroun. **[Sleeping Sickness in Cameroon.]**—*Bull. Soc. Path. Exot.* 1925. Dec. 9. Vol. 18. No. 10. pp. 762–769.

A brief summary is given of some of the results of the work on sleeping sickness accomplished in the Cameroons since the French occupation and particularly since the middle of 1920.

The first efforts of the French were made in the regions of Nyong and Doumé, where the Germans had organized some years before the War a number of segregation camps and in 1913 a regular prophylactic service. According to German reports the territories of these two rivers were re-examined in 1914 and 4,000 to 5,000 sleeping sickness cases found. Jamot, however, believes for reasons given that the true figure was at this period much greater. In the middle of 1920 JOJOT was sent to study the subject carefully and to organize prophylactic measures in the subdivisions of Akonolinga, Abong-Mbang, and of Doumé. In less than two years he reconstructed the sanitary camp of Ayos and made a fresh census of the subdivisions of Akonolinga and Abong-Mbang, finding 6,500 cases. At the same time HUOT explored the Doumé region, where he found more than 2,000 cases. At the commencement of 1922, Jamot was sent to replace JOJOT. He immediately proposed to organize research missions for treatment on the lines of those which he had carried on with success for some years in Oubangui-Chari; he then hoped to visit systematically all the villages of the sector and to examine one by one all the inhabitants. With the assistance of five of his colleagues, the author visited all the villages in the three subdivisions and examined almost all the inhabitants. They were able to establish that the Nyong is an epidemic focus of extreme intensity. In certain villages situated near the river between Abong-Mbang and Kolmaka 17,797 persons were examined and 14,374 found to be infected. From the Nyong the disease spreads in all directions, but diminishes in intensity as the distance from the river increases.

Details are given of the incidence of the disease in various parts of the three divisions.

The rivers of Logone and of Oubangui-Chari are especially infested by tsetse, which are apparently all *G. tachinoides*. *G. palpalis* was never found, and if it occurs must be extremely rare. There exists a striking parallelism between the distribution of fly and that of the disease, and it is probable that *G. tachinoides* plays in the northern districts a rôle which is played by *G. palpalis* in the more equatorial regions.

There are in the Cameroons many other foci of trypanosomiasis ; the Germans had already drawn attention to the existence of a number of these, but it has not yet been possible to study them. The census which the Germans have made shows that up to the 1st June last 45,176 cases had been discovered, and that up to the date mentioned 12,659 had died. Immediately a diagnosis was made the patients received a large dose of atoxyl. They were then provided with a tally and sent back to their villages. The travelling missions, under the charge of European sanitary assistants, visited the villages periodically and administered the treatment prescribed, but at each village they had to register a great number of defections. The advanced cases, who appreciated the good results of treatment, came regularly for further injections, but those of the first period who, as a rule, did not feel ill, did not comprehend the necessity for the injections and endeavoured to escape them. It is calculated that in the Nyong and Doumé districts more than 10,000 cases escaped the treatment.

W. Y.

BRAU. La lutte contre la maladie du sommeil au Cameroun **[Measures against Sleeping Sickness in Cameroon.]**—*Ann. de Méd. et de Pharm. Colon.* 1925. Sept.–Oct.–Nov.–Dec. Vol. 23. pp. 403–444. [Refs. in foot-notes.]

In this long paper the author gives a detailed account of the history of sleeping sickness work done by the Germans, and subsequently by the French, in the Cameroons. As most of this work has already been described by various authors in previous papers, it need not be summarized here again.

W. Y.

FOURCHE (J. A.). Société Internationale Forestière et Minière du Congo. Rapport de la mission contre la maladie du sommeil, mai 1923 à mai 1925. **[Report of the S.I.F.M.C. Mission against Sleeping Sickness in Congo, May 1923–May 1925.]**—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 215–247. With 24 figs.

The district of Kasai, which has a population of 1,500,000, had remained entirely unsurveyed medically up to 1920. The present paper deals with the sleeping sickness work accomplished between May 1923 and May 1925. During this period the mission examined and treated twice all the inhabitants of the Forminière-Kasai concessions, and the labourers, of whom they have only had charge since July 1924, once.

At the first examination 30,000 natives were examined, and at the revision 40,000 natives and 20,000 workers. During the first examination 581 cases of sleeping sickness were discovered and treated, and at least as many suspects were also treated. The percentage of sterilizations obtained varied from 35 to 72, *i.e.*, about 55 for the whole territory. In the revision 960 cases were treated—some old cases and some new—and at least an equal number of suspects. In addition, during the last nine months 400 infected labourers and at least as many suspects were also treated. The author is not able yet to form an opinion regarding the results of the treatment of these cases, but he has every reason to believe that they will be better than those obtained during the first inspection.

Between Tshikapa and Kabambai, where the disease is almost completely imported from the country to the east, the number of infected is less than 1 per cent.; but as all the streams of the Kasai are infested with tsetse, as also are many other rivers in the district, there is cause to fear that unless steps are taken a permanent focus of the disease will be established.

The territory lying on the left of the Kasai between the Angola, the Lovua, and the Lubembe is already infected. In the whole district constituting the Forminière concessions only *T. gambiense* was found; infections due to *T. rhodesiense* are unknown. Although difficulties of organization rendered the first tour of inspection less perfect than could be desired, it is calculated that the number infected varied in the different parts of the concessions from 2 to 10 per cent., with probably an average infection rate of 5 per cent. for all the territory on the left bank of the Kasai. The disease is spreading, but fortunately only slowly, especially as one proceeds east. As a result of the campaign the progress is practically arrested.

W. Y.

DE WOLF (H.). Palpation ganglionnaire et diagnostic de la maladie du sommeil dans le traitement ambulatoire. [**Gland Palpation and Diagnosis of Sleeping Sickness in Ambulatory Treatment.**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 189–195.

Of late much has been written on the subject of gland palpation as of diagnostic value for the ambulatory treatment of sleeping sickness In the present note the author stresses the value of this sign: he classifies the cases exhibiting glandular enlargement according to the number of the enlarged glands and their size but not consistence, and by this means separates them into three groups:—large formula, moderate formula, and small formula. In a series of tables he sets forth the results of examining the population, showing the number falling into each of the above groups and the number of each in which gland puncture was positive. Apparently the percentage of the small and moderate formulas positive depends almost exclusively on the number of large formulas positive and the total percentage of positive formulas is specially influenced by the number of large formulas in the district.

The value which the author attributes to the different formulas as of diagnostic value for the treatment of sleeping sickness is as follows:—

1. *With large formula.* Since a single puncture in the group gives 60 per cent. of positive results, the author considers it unnecessary to puncture any of this group, and in view of the urgency of the matter, simply a waste of precious time. The negative results of microscopic examination obtained in 40 per cent. of cases is believed to be due to the fact that the glands were the result of infective conditions of the skin and scalp or of yaws and syphilis, to the fact that the microscopic preparation was poor, or to the fact that too small a quantity of gland juice was obtained.

2. *With moderate or small formula.* This depends almost entirely on the number with large formula. If in a region there are no cases with large formula, the author considers all are negative and need not be punctured; but if on the contrary there are many with large formula, he considers all positive and consequently that puncture is unnecessary.

The following are among the general conclusions :—

1. The author attaches great diagnostic value to gland palpation not followed by puncture.

2. It is unnecessary to puncture in ambulatory treatment either those with large formula or those with moderate or small formula ; to the first group a curative course of treatment should be given and the last two a prophylactic course.

3. In districts where only moderate small formulas are found, treatment is unnecessary ; such regions can be considered as free from sleeping sickness.

W. Y.

VAN DEN BRANDEN (F.). Sur un essai d'administration de " Bayer 205 " prophylactique dans une agglomération indigène. [**Trial of " Bayer 205 " Prophylactically in a Native Chiefdom.**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 175–177.

Trypanosomiasis is endemic in the chiefdom of Binza and as the result of an examination of the population 2·3 to 3 per cent. of new cases were found. All the inhabitants, 256 in number, were treated with "Bayer 205" in February and March 1923 : the adults had one injection of 1 gm., the young people two injections each of ·5 gm., the children two injections of ·25 gm. each, and the sucklings two injections of ·1 gm. each. After three prophylactic injections the population has been submitted to two rigid re-examinations, the first in December 1923 and the second in October 1924. The first re-examination resulted in the discovery of two new cases, both in children, and the second in that of three new cases. In a subsequent note the author adds that he has since this paper was written commenced a third re-examination, in May 1925 and has already found 5 new cases. He adds that in order to obtain lasting results the prophylactic injections of "Bayer 205" will have to be renewed at least every nineteen months.

W. Y.

STRADA (L.) & LOPES (A. J.). Nôtes préliminaires sur le traitement de la trypanose humaine par la germanine (" 205 Bayer "). [**Treatment of Human Trypanosomiasis by " Bayer 205".**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 179–187.

The patients were all advanced cases previously treated with atoxyl, or atoxyl and emetic : they can be divided into two groups, mild cases in which spinal punctures revealed less than 25 elements per cmm., and severe cases where there were over 25 elements per cmm. The dose administered was 2 cgm. per kilo. of body weight ; in the first cases three injections were given, viz., on the third, first and thirteenth days, but in the later cases four, viz., on the first, third, fifth and fifteenth days.

Details of the 43 cases treated are given in a table showing the results of spinal puncture before and after treatment. The general result appears to be that the drug was well tolerated, that the general condition was frequently improved, but that little or no change occurred in the spinal fluid.

W. Y.

WALRAVENS (P.). Le traitement de la maladie du sommeil par le "205 Bayer." **[Treatment of Sleeping Sickness by "Bayer 205".]** —*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 641–645.

This paper gives later information regarding the Congo cases of sleeping sickness treated by KLEINE and FISCHER in 1923. Although there is some doubt regarding the condition of the spinal fluid in these cases the author estimates that 48 were in the first stage and 47 in the second stage. These patients were treated at the beginning of 1923 and their blood has been re-examined at regular intervals since. In April 1925 the author made a lumbar puncture and examined a thick film of the blood of all the cases he was able to collect; the results are shown in a table. Of the 95 cases 27 (28·4 per cent.) are dead, and of the 44 who were re-examined 25 had a normal spinal fluid and negative blood, 5 appeared to be sterile, 12 are in the second stage of the disease and 1 has a doubtful condition of the spinal fluid.

The second portion of the paper relates to the later history of 11 cases, mostly in the second stage of the disease, treated with combinations of "Bayer 205" and of emetic, neosalvarsan or atoxyl. The spinal fluid was examined one month and six months respectively after treatment; each patient was then given 25 gm. of tryparsamide and the spinal fluid again examined six months later. Eight cases can be regarded as definitely cured and one as probably cured.

W. Y.

VAN DEN BRANDEN (F.). Le tryparsamide chez les trypanosés chroniques. Communication préliminaire. **[Tryparsamide in Chronic Trypanosomiasis.]**—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 645–647. [1 ref.]

The author favours the administration of a weekly dose of 2 gm. of tryparsamide and records that in his series of 115 cases it has only once been found necessary to interrupt the treatment on account of ocular trouble. The total dose administered varied from 20 to 70 gm. and the author believes that in order to obtain real and permanent results in chronic trypanosomiasis it is necessary in most cases to give from 70 to 80 gm.

In this paper are recorded the results obtained in the first cases; the patients are grouped into six classes.

Class 1. Those in which the spinal fluid did not contain more than 50 lymphocytes per cmm. In this class 57 per cent. of apparent cures were obtained with doses varying from 20 to 62 gm.

Class 2. The spinal fluid contained 50 to 100 lymphocytes per cmm. In this class 22 per cent. died and 33 per cent. were apparently cured with doses varying from 17 gm. (in a child) to 60 gm.

Class 3. The spinal fluid contained 100 to 200 lymphocytes per cmm. Here 25 per cent. of apparent cures were obtained with doses varying from 20 to 70 gm.

Class 4. The spinal fluid contained 200 to 500 lymphocytes per cmm: 6·3 per cent. died and there were 12·5 per cent. of apparent cures with doses varying from 15 gm. (in a child) to 70 gm.

Class 5. The spinal fluid contained more than 500 lymphocytes per cmm.; 25 per cent. of apparent cures were obtained with doses varying from 19 to 74 gm.

Class 6. The spinal fluid contained trypanosomes: 17·6 per cent. died and 17·6 per cent. were apparent cures after doses varying from 19 to 60 gm.

The author is continuing the observations and treatment of most of the chronic cases and in some of them the total dose given within 10 months already exceeds 80 gm. In a series of control cases of chronic trypanosomiasis treated with soamin and tartar emetic, the total dosage varying from 7·5 gm. of soamin and 1·3 gm. of emetic to 29 gm. of soamin and 5·6 gm. of emetic, 17 per cent. of apparent cures were obtained.

W. Y.

LAIGRET (J.). Note sur le traitement de la trypanosomiase humaine par la tryparsamide et l'utilisation de ce produit dans la pratique prophylactique. [**Treatment and Prophylaxis of Human Trypanosomiasis by Tryparsamide.**]—*Bull. Soc. Path. Exot.* 1925. Dec. 9. Vol. 18. No. 10. pp. 775–779.

The author summarizes the results obtained in the treatment of 95 cases of sleeping sickness by tryparsamide. Most of the patients have been observed during a period of from eight to twelve months. Owing to the limited amount of drug at disposal only very incomplete courses of 5 or 6 weekly injections could be given: the dose varied from 1 gm. to 3·5 gm. per injection. All the patients were in the second stage of the disease.

In patients in the early second stage, i.e., with only slight changes in the spinal fluid, there was no untoward results such as one encounters from time to time with massive doses of atoxyl: and in all instances there was a marked decrease in the lymphocytosis and excess of globulin, so that in half the cases the fluid became, and has remained, normal.

In patients well in the second stage, but in good clinical condition, i.e., with profoundly damaged spinal fluid containing trypanosomes, transient amaurosis developed in one case, but disappeared on cessation of treatment; there were no deaths and no acceleration in the development of the disease. One case relapsed with parasites in the blood, but in the remaining 29 cases there was a persistent sterilization of the blood and cerebrospinal fluid, and in 20 cases the latter became absolutely normal.

Among patients in advanced stages with profound cerebrospinal changes and well-developed nervous symptoms, the same favourable action of the drug was noted: trypanosomes disappeared from the spinal-fluid and the lymphocytosis and excess of globulin decreased, sometimes even to normal. This was accompanied by extremely rapid clinical amelioration which greatly impressed the native population. Apparently, patients even in this advanced stage have been cured; the only accidents noted were transient amaurosis in two cases, and one death which was due to the fact that too large a dose of the drug was given; in this class of patient the initial dose should not exceed 1·0 to 1·5 gm.

In patients in the last stage of the disease, who in the ordinary way might have been expected to die in a few weeks, 13 of the 18 treated are still alive after periods varying from 8 to 12 months and seven appeared to be cured. Stress is laid on the fact that these cases should be treated by very small initial doses of the drug, and the author believes that the fatalities and blindness produced by the drug were due entirely to the administration of too large initial doses.

The use of tryparsamide has completely modified the general aspect of the hospital at Brazzaville: the mortality which before tryparsamide was 4 to 12 per cent. per month fell to 2 or 3 per cent. and in certain months to nothing. It will probably be found desirable to substitute tryparsamide for atoxyl for general prophylactic purposes. The value of the drug from this point of view can be judged from the following facts:—

Of 100 patients in the first stage of the disease treated by VAN DEN BRANDEN the peripheral sterilization of all had been maintained during an observation period of a year, whilst amongst the 95 patients in the second stage of the disease treated by the author and observed for an average period of seven months, only one (who received a very small quantity of the drug) relapsed with parasites in the blood, and only in one did the parasites reappear in the cerebrospinal fluid.

Attention is drawn to the moral effect produced by the favourable results obtained by the drug, and to the fact that tryparsamide is of value in the treatment of syphilis and yaws, the two diseases which, after sleeping sickness, are most widely spread in the French equatorial possessions. There appear to be only two objections to the drug; the first is the necessity to inject it either intramuscularly or intravenously, but this is, after all, a trivial objection; the second, its relatively high price, is more serious. The author advises the substitution of the usual prophylactic course of six injections of atoxyl by six weekly injections of tryparsamide in the following doses:— The first two 4 cgm. per kilo of body weight, the next two 5 cgm. per kilo, and the last two 6 cgm. per kilo, i.e., a total of 15 gms. for an adult of 50 kilogrammes. This course will work out at about thirty francs per patient.

W. Y.

VAN DEN BRANDEN (F.). Le stovarsol ou " acide acétyloxyaminophénylarsinique " dans le traitement de la trypanosomiase humaine. [**Stovarsol in the Treatment of Human Trypanosomiasis.**] —*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 33–36.

Good results reported by a number of workers in the treatment of syphilis by stovarsol have led the author to try this drug, which can be so easily administered by the mouth, in human trypanosomiasis and yaws. It was found that the native tolerates large doses and that as much as 3 gm. could be given daily for many consecutive days. As its action in trypanosomiasis is but slow and transient, the drug cannot be considered to have any value in the therapy of this disease.

W. Y.

DIOS (R. L.), ZUCCARINI (J. A.) & OYARZABAL (J.). Sobre un nuevo caso de Tripanosomosis humana en la Rep. Argentina. [**Fresh Case of Human Trypanosomiasis in the Argentine.**]—*Rev. Inst. Bacteriolog.* Buenos Aires. 1925. Sept. Vol. 4. No. 2. pp. 164–168. With 5 text figs. and *C.R. Soc. Biol.* 1925. Nov. 6. Vol. 93. No. 31. pp. 1114–1115.

This paper contains a brief clinical account of three cases of human trypanosomiasis in the Argentine. The first was that of a girl of 6 months, the second a girl of 8 years, and the third a boy of 4 years. The first two cases have been recorded previously. The third patient lived in a grass hut infested by numerous Triatoma: he exhibited facial oedema, slight exophthalmos, oedema of the eyelids and along the legs, some adenitis and enlargement of the thyroid: the heart and lungs were normal, the spleen normal, the liver slightly enlarged, and the reflexes slightly exaggerated. Trypanosomes were always scanty in the blood; the spinal fluid was normal. The blood was inoculated into 5 guineapigs, 5 rats, 3 young dogs and a falcon: 2 rats and the 3 dogs became infected.

W. Y.

DUKELSKY (Olga). Ueber die Neutralisierung des Anaphylatoxins durch Salvarsan mit Verbindung mit der Pathogenese der Todesfälle bei trypanosomen Erkrankungen. [**The Neutralization of Anaphylatoxin by Salvarsan in Relation to the Pathogenesis of Death in Trypanosome Infections.**]—*Arb. a.d. Microbiol. Inst. des Volksunterrichtskomissariats.* Moscow. 1925. Vol. 1. German summary p. 27. [In Russian pp. 19–26. 18 refs.]

It has already been shown by a number of authors that trypanosomes *in vitro* and in the animal organism can form an anaphylatoxin in the blood serum.

The author's attempts to neutralize the anaphylatoxin through salvarsan *in vitro* have for the most part been successful. The addition of salvarsan to a lethal dose of anaphylatoxin renders it harmless to guineapigs, the control animals receiving an equal dose of anaphylatoxin dying in a few minutes.

The clinical symptom-complex and the rapid occurrence of death in acute trypanosomiasis remind one greatly of an anaphylactic shock. This consideration, and the rapid improvement of the experimental animals after the administration of salvarsan, warrant the conclusion that the symptoms and death produced by trypanosome infections are the result of anaphylatoxins and that these are neutralized *in vivo* by salvarsan just as they are *in vitro*. The capacity of salvarsan to neutralize anaphylatoxin is dependent on its high physico-chemical activity.

W. Y.

JOHNSON (W. B.). **The Serum-Formalin Reaction upon Sera of Natives of Nigeria.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Nov. 19 & Dec. 17. Vol. 19. Nos. 5 and 6. pp. 328–329.

The author records the results of the serum-formalin and Sachs-Georgi tests made at the same time on 168 cases in Nigeria where syphilis and protozoal infections are exceedingly common. The tests were made at the native hospital at Kaduna from January to September, 1925, in cases of suspected syphilis upon whom the Sachs-Georgi test had been done for diagnostic purposes. The serum-formalin test was performed by adding 1 minin of commercial formalin to 1 cc. of serum; the formation of a complete "gel" was recorded as positive, that of an incomplete "gel" as weakly positive, and when the serum remained fluid after 24 hours the reaction was negative. Of the 168 sera examined 84 were positive, 24 weakly positive, and 60 negative. The results are set forth in a table from which it is seen that of 99 cases in which the Sachs-Georgi reaction was positive 80·8 per cent. gave a positive serum-formalin reaction, of the 28 cases in which the Sachs-Georgi reaction was weakly positive 53·6 per cent. gave a positive serum-formalin reaction, and of the 41 cases in which the Sachs-Georgi reaction was negative 31·7 per cent. gave a positive serum-formalin reaction [see MORRISON, this *Bulletin*, Vol. 22, p. 539].

The conclusion is as follows :—

"In view of the high percentage of a positive serum-formalin reaction in cases of syphilis (so prevalent a disease in most tropical countries), and of the occurrence of a positive reaction in a fair percentage of patients suffering from other diseases it would appear that the serum-formalin reaction can be of little value in estimating past or present trypanosome infection."

W. Y.

SCHERN (Kurt). Ueber Trypanosomen. I—VI Mitteilungen. [**On Trypanosomes. Contributions 1-6.**]—*Cent. f. Bakt.* I. Abt. Orig. 1925. Nov. 2. Vol. 96. No. 5-6. pp. 356–360 [1 ref.]; 360–362; 362–365 & Nov. 25. No. 7-8. pp. 440–443; 444–451; 451–454. [3 refs.]

I. Das Phänomen der Trypanosomenwiederbelebung und das Vorhandensein vergärbarer Substanzen in den Lebern und deren Extrakten, welche "wiederbelebend" wirken. [**The Phenomenon of Revival of Trypanosomes and the Existence of Fermentable Substances in the Liver and its Extracts which have a Reanimating Effect.**]

Whilst working in UHLENHUTH's laboratory, the author had observed that the addition of blood of healthy rats or horses to a coverslip preparation of infected blood—nagana, dourine, or sleeping sickness—which had been kept until the parasites had become motionless or almost so, soon caused the trypanosomes to regain their former activity. The length of time trypanosomes remain active *in vitro* depends on the stage of the infection when the preparation is made; the earlier the infection the longer the parasites preserve their motility *in vitro*; preparations made from rats at the beginning of the infection remain active for many hours, whereas those made shortly before the death of the animal become motionless in a few minutes. The phenomenon enables one to forecast the length of time which the host will live; if the trypanosomes from an infected rat remain active *in vitro* for several hours the animal will probably remain alive for a comparatively long time, but if the parasites become motionless in about ten minutes then the host is likely to die within a few hours.

Investigation showed that the re-animating substance was found only in the serum and in liver extracts; it was thermostabile, withstood drying, and survived for long periods at 37° C., as also at 0° C.; but it quickly disappeared if the solution became putrid. The author was able to obtain from the serum and liver a mass which contained the re-animating substance in concentrated form and this mass (liver extract) has been kept for years without losing its properties. Subsequent investigation showed that extracts of serum and liver of animals in the last stage of trypanosomiasis possessed the re-animating property in relatively slight degree, or not at all. Arsenical treatment of such animals caused it to re-appear again, but if the trypanosomes became arsenic-fast it disappeared once more. Experiments showed that trypanosomiasis influenced the capacity of the liver to deal with carbohydrates: rats, at the beginning of an infection could assimilate considerable quantities of carbohydrates, but in animals in the last stage of infection the carbohydrates were poured out in the urine.

It was next determined that a 10 per cent. solution of liver extract from cattle, hens, rabbits, guineapigs or rats in distilled water contained a substance which was readily fermentable by yeast and gave in fact distinctly more gas than a 1 per cent. solution of grape sugar. The general conclusion is reached that liver extracts of normal animals which exert a re-animating action on trypanosomes contain substances which are readily fermentable by yeast.

II. Sind in den Extrakten, welche aus den Lebern der an einer akuten Trypanosomiasis verendeten Tiere hergestellt sind, noch durch Hefe vergärbare Substanzen vorhanden ? [**Do the Extracts prepared from the Liver of an Animal which has died from Acute Trypanosomiasis contain Yeast Fermentable Substances ?**]

Experiments described in this paper show that the yeast fermentable substance is absent from liver extracts of animals in the last stage of trypanosomiasis ; and it is concluded that the liver sugar so important for the life of the organism disappears in the course of the infection.

III. In welcher Weise wirken die vermittels Hefe vergorenen Extrakte der Lebern normaler Tiere in bezug auf das von mir beschriebene Trypanosomenphänomen ? [**In what Manner do the Fermentable Substances in Extracts of Normal Liver act in Relation to the Trypanosome Re-animating Phenomenon ?**]

It was found that normal liver extracts which before fermentation give the re-animating reaction fail in the same degree to do so after fermentation ; and from this fact it is concluded that the reaction is dependent on liver sugar.

IV. Der Nachweis des Mangels der das Trypanosomenphänomen der Wiederbelebung bedingenden Substanzen in Serum und Leber chronisch infiziert gewesener, trypanosomenkranker Tiere. [**The Demonstration of the Deficiency of the Trypanosome Re-animating Substance in the Serum and Liver of Animals suffering from Chronic Trypanosomiasis.**]

Whereas in the earlier experiments rats had been used in the experiments here recorded, the author employed rabbits infected with *T. equinum.* He found that the reaction given by the serum and liver of the animal suffering from a chronic infection was much inferior to that given by the serum and liver of normal animals ; and that the livers were also deficient in liver-sugar. Similar observations were made in horses suffering from mal-de-caderas.

V. Das Trypanosomenphänomen und die Wirkung von Dextrose- und Lävuloselösungen sowie von Leberbrei-Insulin auf labile Trypanosomen. [**The Trypanosome Phenomenon and the Action of Dextrose and Laevulose Solutions and also of Liver-Mush-Insulin on Labile Trypanosomes.**]

It was found that solutions of dextrose and laevulose prolonged the period of activity of trypanosomes *in vitro,* and the action of various strengths of solution of these sugars is compared with that of normal rabbit and horse serum and of liver extracts of normal rabbits and hens. Finally, it was shown that if a guineapig be bled dry and its liver ground up in a mortar without the addition of fluid, its re-animating action was definitely lessened by treatment with insulin.

VI. Erörterungen ueber die Pathogenese der Trypanosomiasis auf Grund der Beobachtungen ueber das Zuckerphänomen der Trypanosomen. [**Discussion on the Pathogenesis of Trypanosomiasis based on the Observations of the Sugar Phenomenon of Trypanosomes.**]

This commences by summarizing the chief observations and conclusions reached in the five previous communications. These are as follows :—

1. In the serum and liver of normal animals are substances which re-animate trypanosomes which had become immobile *in vitro* and prolong the period of their mobility ; the chief constituent of these substances is sugar.
2. These substances disappear from the serum of animals which are infected with trypanosomes during the course of the infection.
3. These substances (and the sugar) are absent in the serum and liver of animals which are dying of trypanosomiasis.
4. They reappear in rats which have been cured of trypanosomiasis by arsenic, their reappearance being gradual and corresponding to the disappearance of trypanosomes from the body.
5. The substance can be obtained in concentrated form from the liver extract of normal animals ; dilution of such extracts cuts out the sugar phenomenon, so that the red corpuscles present in the trypanosome suspensions become dark red, probably as a result of the metabolism of the trypanosomes.
6. The substances can be removed from normal liver extracts by fermentation of yeast.
7. Yeast fermented extracts of the liver of normal animals do not cut out the sugar phenomenon of the trypanosomes.
8. Liver extracts obtained from animals which die of trypanosomiasis are deficient in yeast fermentable bodies in comparison with extracts of normal livers.
9. Rats in the last stage of trypanosomiasis which had been given carbohydrates showed them in the urine.
10. Laevulose and dextrose solutions (·5 per cent. in ·05 per cent. NaCl) produce a sugar phenomenon of trypanosomes ; insulin limits the sugar phenomenon somewhat. Chemical investigation of the blood of trypanosome infected animals shows hypoglycaemia in the advanced stages of the infection.

The author asks what general conclusions can be drawn from this work regarding the pathology of trypanosomiasis, especially in respect of the mode of action of the trypanosomes in the organism. He believes that the blood and liver sugar is in some way or other gradually used up by the trypanosomes for their metabolism ; this process is at first regulated by the liver which gives out a corresponding quantity of sugar into the blood, yet as things continue owing to the multiplication of the trypanosomes, the liver finally gives out and becomes almost entirely drained of sugar. One pathogenic action of trypanosomiasis is hence a disturbance of the liver function of storing carbohydrates and finally there develops absolute hypoglycaemia and all its consequences.

W. Y.

BEVAN (Ll. E. W.). **The Trypanosomiases of Man and Animals in Southern Rhodesia.**—*Vet. Jl.* 1925. Nov. Vol. 81. No. 11. pp. 536–546.

This paper was an address delivered at a Conference to consider ways and means of dealing with tsetse fly and the diseases distributed by it, held at Salisbury on April 14th, 1925. It is a general summary of the subject and contains nothing new.

W. Y.

BLACKWATER FEVER.

MACMILLAN (R. J. A.). **Report on Blackwater Fever in Uganda for 1924.**—*Uganda Ann. Med. & San. Rep. for Year ended 31st Dec., 1924.* pp. 56–61.

During the year 1924, 70 cases of blackwater fever were treated and 23 ended fatally. The greatest incidence of cases was in July and November and the lowest in April and September. The months in which the highest incidence occurred were those in which the lowest temperatures were recorded. A series of tables is given showing the age, race, and sex incidence, the number of officials and non-officials infected, and the length of residence in the tropics. Twenty-four of the patients had had previous attacks, and of these 7 ended fatally. Every case gave a history of previous and more or less frequent attacks of malaria, which had been inadequately treated. The blood of 17 cases was examined prior to the attack of blackwater :—In 6 no parasites were found, in 4 *P. falciparum*, in 4 *P. vivax*, and in 3 a mixed infection. Forty-nine cases were examined during the attack :—In 27 no parasites were found, in 15 *P. falciparum*, in 5 *P. vivax*, and in 2 a mixed infection. A certain amount of information is given regarding the number of red cells and leucocytes per millimetre of blood. In 61 of the cases there was no relapse and 21 deaths occurred. In 9 cases relapses—one had 16—were observed ; 2 of these ended fatally. The cause of death in the 23 fatal cases is recorded as follows :—Cardiac failure 18, suppression and cardiac failure 2, suppression 2, and uraemia following suppression 1. Information is given regarding symptomatology and treatment.

The author writes that from a careful analysis of 224 cases of blackwater which have occurred in Uganda during the past three years there appear to be excellent grounds for coming to the following conclusions :—

" (*a*) There is such a thing as quinine intolerance and this drug can produce haemoglobinuria in cases which exhibit this idiosyncrasy—a case is cited this year of a young Asiatic who, whenever quinine is given him, at once develops Blackwater within the hour—he has had eight attacks already, owing to medical officers not believing his statement and attempts being made to conceal the quinine in mixtures—he carries a medical certificate now that he cannot tolerate quinine and that it must not be given him.

" (*b*) Apart from quinine intolerance there is also a critical exciting dose of quinine—it may be 10, 15, 20, 30, 40 grains or more—which, according to experience in this Protectorate, certainly precipitates attacks of Blackwater in certain cases.

" (*c*) It would appear that in a great many cases a second attack, not a relapse, is dependent on the patient being re-infected with a fresh malarial infection since the first attack. I mention this because our statistics show that many cases who have had more than one attack have suffered from malaria more or less inadequately treated in between the attacks of Blackwater; yet there are cases who have suffered from one attack of Blackwater and who have been sent or who have gone to a non-malarial region, and they have had no further malarial attacks and no further attacks of Blackwater.

" (*d*) There is a very grave risk of cardiac failure in every case ; in 18 cases this year death was due to this and of these 18 cases 13 had been moved either during the attack or shortly after it. Unless unavoidable, therefore, no case of Blackwater Fever should be moved, and if it has to be moved the same care should be taken as would be exercised in moving a case of diphtheria."

W. Yorke.

GHIRON (Mario). Sulla emoglobinuria nei malarici. [**Haemoglobinuria in Malaria.**]—*Policlinico.* Sez. Med. 1926. Jan. 1. Vol. 33. No. 1. pp. 1–26.

The observations described in this paper were made on four patients suffering from a severe attack of blackwater fever at the time of admission to hospital. The serum of these patients exhibited a marked haemolytic action against red cells impregnated with quinine. Whilst the reaction was obtained with red cells of normal individuals, it was much more striking when the test was performed with red cells from cases of malaria, either benign or malignant tertian. In order, therefore, to obtain well-marked haemolysis three factors are necessary, viz., serum from a case of blackwater fever, red corpuscles from a case of malaria, and quinine.

W. Y.

BRAHMACHARI (Upendra Nath) & SEN (Parimal Bikas). **Certain Observations on the Mechanism of Quinine Haemoglobinuria in Man. No. 1.**—*Indian Jl. Med. Res.* 1925. Oct. Vol. 13. No. 2. pp. 337–341.

The observations recorded in this paper were made on a patient who developed haemoglobinuria each time quinine was given to him. On admission the spleen extended 5 in. below the costal margin ; the red blood corpuscles numbered 1,880,000 ; the white corpuscles 2,500, and the haemoglobin was 35 per cent. No malaria parasites were found, but blood cultured on NNN medium showed the presence of Leishmania. After ten injections of urea stibamine the spleen could not be felt, the blood culture was negative, the fever had disappeared, and there was marked general improvement. Three months later the white corpuscles numbered 7,100 and the blood culture was still negative. A 5-grain dose of quinine bihydrochloride was given on January 12, 1925, March 19th, May 14th, and June 7th. Haemoglobinuria developed within a few hours after each quinine administration and lasted for about twenty-four hours.

It is remarked that repeated examinations of the patient's blood failed to reveal the presence of malaria parasites. A number of observations were made in order to elucidate the mechanism of haemolysis in this case and the following summary of the results is given :—

"1. In individuals who have a tendency to quinine haemoglobinuria, the red corpuscles are not more vulnerable to quinine than those of other individuals who have no such tendency.

"2. No haemolysin was discovered in the peripheral blood during the active stages of quinine haemoglobinuria.

"3. We have demonstrated that during the active stages of quinine haemoglobinuria, the process of haemolysis takes place at least in one of the internal organs, namely, the liver.

"4. There is nothing in the patient under our observation to indicate that this tendency to haemoglobinuria was due to attacks of malaria.

"5. The patient was suffering from kala-azar and although he was cured of his disease by urea stibamine, tendency to quinine haemoglobinuria was not diminished after the cure was effected.

"6 We suggest that in individuals susceptible to quinine haemoglobinuria, quinine probably remains adsorbed with an *unknown* substance in the liver for prolonged periods giving rise to a concentration of the drug, at which quinine haemolyses red corpuscles in the test tube. It is a known fact that when quinine is administered to any individual, it does tend to concentrate in the liver, but whether haemolysis will take place in the liver will depend upon (1) The concentration of quinine in the liver, and (2) the period during which such a concentration is maintained in the organ."

W. Y.

BRAHMACHARI (Upendra Nath). **Certain Observations on the Mechanism of Quinine Haemoglobinuria in Man. No. 2.**—*Indian Jl. Med. Res.* 1926. Jan. Vol. 13. No. 3. pp. 695–696.

The author has made observations on a case of blackwater fever in which the mechanism of haemoglobinuria was found to be similar to that of quinine haemoglobinuria. The patient, aged 14, had had haemoglobinuria for four days when he came under observation, haemoglobin appearing in the urine about six hours after oral administration of quinine. The spleen was hard and extended two inches below the costal arch and the fever was of an intermittent type with double rises in twenty-four hours.

The patient was asked to pass urine and at the same time blood was withdrawn from the liver and from a vein at the bend of the elbow. The following observations were made :—(1) Blood from liver showed distinct haemolysis ; (2) Peripheral blood showed very faint haemolysis ; and (3) Urine contained very small quantities of haemoglobin.

The following summary is given :—

"(1) Patient was accustomed to take quinine for attacks of malarial fever from which he was suffering from time to time, but this was the first occasion he had haemoglobinuria.

"(2) The present attack of haemoglobinuria was of an intermittent nature, increasing during heights of fever and diminishing during apyrexia.

"(3) During the stage of active haemolysis, haemolysis was going on in the liver just as in the case of quinine haemoglobinuria

"(4) Though the patient gave a history of malarial attacks, he was now suffering from kala-azar

"This is the second case in which haemoglobinuria was manifested in a case of kala-azar"

W. Y.

VIALATTE (Ch). Syndrome bilieux-hémoglobinurique au cours d'un accès de paludisme. [**Blackwater in Course of an Attack of Malaria.**]—*Bull. Soc. Path. Exot.* 1925. Nov. 11. Vol. 18. No. 9. pp. 715–720. With 1 chart in text. [2 refs.]

A detailed clinical history is given of the patient to whom this work relates. He was a Frenchman 20 years of age, who had always lived in France until June, 1925, when he went to Morocco. In July and August he resided in a notoriously malarious district and took no quinine. On August 15th he arrived at Rabat and two days later he became indisposed with vague pains and slight fever ; he then took five or six doses of quinine. The condition improved and the patient continued at his work. On August 28th he became seriously ill and was admitted to hospital. The symptoms are described and the blood was found to contain *P. praecox* in large numbers: 1 gm. of quinine hydrochloride was given orally. The next day the temperature fell, but the slightly icteric tint of the previous day was much accentuated; in the afternoon there was bilious vomiting; 2·5 gm. of quinine was given in fractional doses during the 24 hours. On August 30th the temperature again rose, the general symptoms became much worse and in the evening blackwater was found; the patient had already had 2 gm. of quinine that day and it was deemed prudent to stop the drug on the appearance of the blackwater. On August 31st the symptoms continued and the blood showed scanty infection of *P. praecox.* The urine cleared up in the evening and 1·75 gm. of quinine was given. The next day the patient was better and 2 gm. of quinine was given. He made an uninterrupted recovery.

The author states that the case presented the following peculiarities:—

1 It occurred in a country where bilious haemoglobinuric fever is very exceptional

2. It occurred during the first attack of malaria in a patient who had never previously had the disease

3 It yielded to quinine and large doses of the drug did not cause a relapse

Stress is laid on the fact that icterus definitely preceded the haemogloburinia.

W. Y.

ROUVROY (H) & VAN NITSEN (R.) L'anurie au cours de la fièvre bilieuse hémoglobinurique [**Anuria in the Course of Blackwater Fever.**]—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp 97–100

Anuria is the gravest complication of blackwater fever. Details are given of a patient who first passed black water on April 30th, 1924, developed suppression of urine on May 2nd, and died on May 15th. Discussing the clinical condition of the patient during this time, the authors state that they had been able to observe very clearly three periods in the course of the anuria. The first was much the longest, lasting about eight days and characterized by hiccough and vomiting In the second intermediate period constipation was very marked and there was profuse perspiration and frequent vomiting The last period of confirmed intoxication appeared towards the eleventh day and was characterized by irregular pulse, cardiac bruits, bloody salivation, epistaxis, incessant vomiting, numbness of the limbs, pruritus, and more and more pronounced hebetude.

W. Y.

NOCHT (B.). Nouvelles recherches sur la pathogénèse de la fièvre hémoglobinurique paludéenne. [**The Pathogeny of Malarial Haemoglobinuric Fever.**]—*Semana Médica.* 1925. Nov. 26. Vol. 32. No. 48. (1663). pp. 1376–1377.

Much work has been done in order to elucidate the mechanism whereby quinine precipitates an attack of blackwater fever. In this article Nocht summarizes briefly the various points which have been already explored and communicates the result of his own researches on the subject. He points out that research into the pathogenesis of blackwater has taken two main directions. The first was to ascertain whether there was any diminution—general or specific—of the resistance of erythrocytes to quinine; work along this line has given absolutely negative results. It was followed by investigations on malarial patients, who were unable to tolerate quinine, to determine whether there existed in the serum or organs substances which by combining with quinine produced haemolysis. Reference is made to the work of RUSZNIAK suggesting that possibly a carbonic acid quinine combination might play a rôle in the production of haemolysis, but later researches made with KESSLER have shown that carbonic acid does not determine quinine haemolysis *in vitro* and that fresh extracts of organs from a fatal case of blackwater inhibit at 37° C. the feeble quinine-carbonic acid haemolysis. Similarly with reference to the haemolytic action of the bile acids it has been shown that chemical haemolysis is inhibited *in vitro* by icteric serum.

During the last two years KRITSCHIFFSKY and MURATOFFA have produced evidence that quinine haemolysis is facilitated *in vitro* by small quantities of lecithin and have reached the conclusion that quinine haemoglobinuria in malaria is produced by the combined action of quinine with the lipoid substances of the organism. At Nocht's request KESSLER has repeated these experiments and has found that lecithin in solutions considerably more concentrated than those used by KRITSCHIFFSKY and MURATOFFA does accelerate quinine haemolysis, but he was unable to find support for the assumption that a serum rich in lipoids hastens quinine haemolysis.

Nocht summarizes briefly the results of experimental work performed by himself. The experiments consisted in injecting dogs with haemolytic amboceptor and observing what effect quinine had on the amboceptor in the organs. The work showed that the action of the haemolytic amboceptor was accelerated and intensified by the administration of quinine. It has not yet been proved that autohaemolysin is developed in malaria patients, but the experiments quoted show how, if it is developed, its action can be intensified by quinine.

W. Y.

EMILE-WEIL (P.) & STIEFFEL (R.). Etude comparative des propriétés hémolytiques du plasma et du sérum des hémoglobinuriques. [**Comparative Study of the Haemolytic Properties of the Plasma and Serum of Haemoglobinurics.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1925. Dec. 17. Year 41. 3rd Ser. Vol. 49. No. 38. pp. 1553–1556.

It has been known for a long time that there exists a radical difference between the haemolytic properties of the plasma and serum in haemoglobinurics, and the present note is a summary of the authors' investigations on the subject.

As the result of examination of the blood of two patients, it was found that the plasma and serum behaved from the point of view of haemolysis as two absolutely different liquids, and the haemolysis produced by the serum appeared in reality to be an artificial phenomenon which could not, to any degree, be considered as the cause of haemoglobinaemia. Consequently, the classical reactions of paroxysmal haemoglobinuria ought to be considered simply as a means of demonstrating a special fragility of the blood characterized by the presence of haemolysins in the serum. They are not specific for haemoglobinuria *a frigore*, which is moreover not a special disease. The haemolytic process appears to be intimately associated with defect in coagulation.

There appears to be a series of degrees in the intensity of the haemolytic process which can be set out as follows :—

1. Plasma spontaneously haemolysed, corresponding to a haemoglobinuric crisis.
2. Serum alone spontaneously haemolysed.
3. Plasma haemolysed after Donath and Landsteiner's test.
4. Serum alone haemolysed after Donath and Landsteiner's test.
5. Plasma haemolysed after Ehrlich's test.
6. Serum haemolysed after Ehrlich's test.
7. Plasma removed after immersion of the arm in a cold bath for an hour haemolysed after Donath and Landsteiner's test.
8. Serum alone haemolysed after the above procedures.

It must, of course, be understood that on every occasion when the plasma proved haemolytic the serum was more strongly so.

W. Y.

EMILE-WEIL (P.) & STIEFFEL (R.). Influence du réchauffement sur le pouvoir hémolytique du plasma et du sérum des haemoglobinuriques. [**Influence of Warmth on the Haemolytic Power of the Plasma and Serum of Haemoglobinurics.**]—*C.R. Soc. Biol.* 1926. Jan. 5. Vol. 93. No. 38. pp. 1560–1561.

The authors have investigated in two cases of paroxysmal haemoglobinuria the effect on the haemolysin of immersing the arm in a warm bath. A ligature was applied above the elbow and the forearm immersed for an hour in a water bath at a temperature of 45° C. ; the blood was withdrawn before removing the tourniquet. The serum of the first case was, before the experiment, definitely haemolytic, but after immersion in the water bath the Donath and Landsteiner reaction was completely negative. Seven days later the blood was still modified, the plasma and serum contained haemolysin spontaneously and the Donath and Landsteiner reaction was positive only with the serum and not with the plasma, but Ehrlich's experiment, however, resulted in considerable haemolysis. After immersing the arm in a water bath again, the serum only gave a slight Donath and Landsteiner reaction.

The second case behaved in exactly a similar manner. The authors also noticed that these alterations were accompanied by changes in the power of coagulation of the blood : the clot formed before the immersion of the arm in the bath was soft and pliable, whilst that formed in blood which was withdrawn after immersion was much firmer.

W. Y.

KIKUTH (Walter). Ueber Hämolysine bei Malaria. [**On Haemolysins in Malaria.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Oct. 15. Vol. 29. No. 10. pp. 560–564. [8 refs.]

Reference is made to the fact that haemolysis in paroxysmal haemoglobinuria is due to the action of amboceptor, which attacks the red cells at low temperatures, and complement ; and that the attack is brought to a close by the exhaustion of complement. This fact has considerable significance for a comprehension of the real cause of the genesis of blackwater fever. In this disease also there is acute blood destruction, but no haemolysin has yet been discovered. It is possible that the presence of a haemolysin is masked by the existence of an antihaemolysin, but this has not yet been shown to be the case.

Experimental work of EHRLICH and MORGENROTH indicated that the inhibitory action of the antihaemolysin is on the complement and not on the amboceptor, and later work of KUMAGAI and INONE on paroxysmal haemoglobinuria appears to support this view. LÜDKE using a technique similar to that employed by KUMAGAI and INONE—allowing inactivated haemolytic serum and a 10 per cent. suspension of washed red cells to stand at 0° C. for 30 minutes, then washing the red cells and adding complement and allowing to stand for 2 hours at 37° C.—obtained positive results in three cases of paroxysmal haemoglobinuria which gave a negative Donath and Landsteiner's reaction, and furthermore he succeeded in obtaining occasional positive results in other diseases such as haemolytic jaundice, severe nephritis, extensive burns and finally in two cases of severe malaria.

At the suggestion of NOCHT the author has examined the serum of numerous cases of malaria for the presence of haemolysin, but before doing this he performed a number of experiments on dogs which for a long time had been injected at short intervals intravenously or intraperitoneally, with homologous erythrocytes. Employing LÜDKE's technique he succeeded in demonstrating in two dogs isolysin and in two others autolysin. Isolysin was found in dogs which for 5 weeks had been injected with canine washed red cells which had been heated at 42° C. for 1 hour; one of the dogs had in addition been injected intravenously with increasing doses of toluylendiamine. Autolysin was detected in dogs which had been injected with their own red cells treated in a similar manner. The Donath-Landsteiner reaction was completely negative in these cases. The author, however, regards it as very doubtful whether autolysin can be produced experimentally.

In all, 24 patients were investigated—9 with tertian malaria, 11 with tropical malaria, 2 with tertian and tropical malaria, 1 with pernicious anaemia and 1 with a high degree of secondary anaemia. These included cases of all degrees of severity and observations were made at all stages of the disease—before, during, and after the paroxysm, and also before and after the administration of quinine. One of the patients exhibited a marked sensitiveness to quinine, 0·1 gm. producing subcutaneous and mucous haemorrhages and 0·25 gm. haemoglobinaemia and haemoglobinuria. In none of the patients, however, was a positive Landsteiner reaction, or a Lüdke's modification of it, obtained.

The general conclusion is that removal of the antihaemolysin sufficed to demonstrate the existence of isolysin in experimental animals, but it did not succeed in demonstrating, as in paroxysmal haemoglobinurics, an autolysin in the serum of malaria cases.

[The reviewer believes that the observations of KUMAGAI and INONE and of LÜDKE on paroxysmal haemoglobinuria are capable of another interpretation: *vide Brit. Jl. of Exp. Path.*, Vol. 2, p. 115.]

W. Y.

MYCOLOGY.

Castellani (Aldo) & Taylor (Frank E.). **Further Observations on Vaginal Monilias and Vaginal Moniliasis.**—*Jl. Trop. Med. & Hyg.* 1925. July 1. Vol. 28. No. 13. pp. 242–249. With 5 text figs. [19 refs.]

Yeast-like cells are often present in large numbers in cases of vaginitis, and are fungi of the genus *Monilia* (Persoon 1797). Two types of vaginitis associated with monilias are distinguished: a membranous type, in which thrush-like patches are present on the mucosa; and a purulent type in which there are no patches and the secretion is thick and purulent. The presence of numerous monilias in cases of chronic vaginal pruritus, a variety of pruritus vulvae and pruritus ani due to fungi of the genus *Epidermophyton*, and the occurrence of fungi of various genera in the vaginal secretion of native woman in the tropics suffering from chronic vaginitis, are also mentioned. Cases of vaginal aspergillomycosis and hemisporosis are described. The detection of lactosuria by the authors' mycological and bacteriological method of identifying carbon compounds is described.

P. Tate.

Castellani (Aldo). **Notes on Three New Yeast-Like Organisms and a New Bacillus, with Remarks on the Clinical Conditions from which they have been isolated:—Furunculosis Blastomycetica, Macroglossia Blastomycetica, Stomatitis Cryptococco-Bacillaris.**—*Jl. Trop. Med. & Hyg.* 1925. June 15. Vol. 28. No. 12. pp. 217–223. With 10 text figs.

(1) Yeast-like organism from cases of Furunculosis blastomycetica. Five cases of Furunculosis blastomycetica, which is indistinguishable clinically from ordinary severe furunculosis, have been met with, three contracted in Great Britain and two in India, and a fungus, probably of the genus *Monilia*, isolated from them. The strains isolated from the English cases are identical, but differ somewhat from those isolated from the Indian cases, which also differ slightly among themselves. The organism from the English cases is yeast-like, the individual cells being somewhat oval or rounded, and having a maximum diameter of 3–4 microns. It is seldom detected microscopically in the pus of the boil-like lesions, in which large numbers of staphylococci are generally present. The fact that staphylococcus vaccine has no action on the condition indicates that the fungus is the real causative agent. Treatment with large doses of potassium iodide was effective, and vaccines prepared from the fungus seemed to be of some use.

(2) Yeast-like organism from a case of Macroglossia blastomycetica. Three cases of macroglossia blastomycetica were met with in Ceylon during 1903–1915. The whole tongue is greatly enlarged, occasionally painful, there may be discomfort in eating and some difficulty in speaking, and the patient cannot whistle; verrucoid patches may be almost completely absent. A yeast-like fungus with rather large, oval cells having a maximum diameter of 4–5 microns was isolated from these cases. The correct name of the fungus, which does not produce gas in any carbohydrate or develop asci, and occasionally produces a little mycelium, is *Monilia macroglossiae* Castellani (syn. *Cryptococcus macroglossiae*, Castellani). Treatment with potassium iodide is beneficial, and vaccines prepared with the fungus seem to be useful.

(3) Yeast-like fungus and bacillus living in symbiosis, isolated from cases of peculiar mycotic stomatitis. A fungus and a bacillus which apparently live in symbiosis were isolated from cases of stomatitis which clinically were totally different from thrush. The first two cases were seen in Central America, and recently an apparently similar condition has been seen in England. The lesions are generally larger than in thrush, are scarcely raised, and appear as thin, translucid films covering parts of the oral mucosa. The two organisms were separated and grown in pure culture with difficulty. The fungus, *Cryptococcus graciloides* n. sp., is very delicate, the individual cells being roundish or oval or, frequently, with a flask-like shape, and having average maximum dimensions of 3–4 microns by 2–3 microns. The fungus never develops asci or mycelium, produces one bud at a time, and does not form a thick pellicle in fluid sugar medium. The bacillus, *Bacillus vermiculoides* n. sp., is rather large, 2–6 microns long, and is often curved in shape. The optimum temperature seems to be 37° C., but it will grow at 22° C. and lower.

The biochemical and cultural characters of the several organisms dealt with in the different parts of the paper are described in detail.

P. T.

RE (Sergio). **Observations on the Cultural and Biochemical Characters of *Monilia Castellanii* (*Cryptococcus Castellanii*) and *Monilia Macroglossiae* (*Cryptococcus Macroglossiae*).**—*Jl. Trop. Med. & Hyg.* 1925. Sept. 1. Vol. 28. No. 17. pp. 317–319. [4 refs.]

The author's work on *Monilia* (*Cryptococcus*) *castellanii* and *Monilia* (*Cryptococcus*) *macroglossiae* is in general confirmatory of that of CASTELLANI as regards cultural and biochemical characters; but, as a small amount of mycelium is developed by both species in certain liquid media, the author proposes the name *Monilia castellani* for the yeast-like organism described by CASTELLANI from cases of "Furunculosis cryptococcica" [*Jl Trop. Med. & Hyg.*, Dec. 1st, 1924] and the name *Monilia macroglossiae* for *Cryptococcus macroglossiac* (Castellani).

P. T.

MILLER (J. E). **Yeast-Cell Infection in Man. Report of Case.**—*U.S. Nav. Med. Bull.* 1925. Sept.–Oct. Vol. 23. Nos. 3 & 4. pp. 229–235. [3 refs.]

According to the author 12 cases of torulosis, or yeast-cell infection of the central nervous system, have previously been described, all of which terminated fatally. The condition is rarely recognized in life, as the symptoms generally simulate those of non-suppurative meningitis. Diagnosis can be made only by lumbar puncture and examination of the spinal fluid for the presence of yeast cells. What is regarded as having been a case of torulosis is described.

The patient, a male aged 54, was admitted to the naval hospital San Diego, California, on January 14th, 1925, under the diagnosis "senile dementia." The chief symptoms before admission were prolonged weakness, loss of weight, severe headache, and pains in the arms and legs. All the symptoms were intermittent. On admission the temperature, pulse, and respiration were normal, but the temperature became slightly elevated after a few days. The patient became progressively weaker and died on February 13th, 1925, of profound asthenia. An autopsy revealed seven small roundish tumours in the brain. The membranes were thickened and adherent, and there was moderate sclerosis of the hemispheres. Sections of the cerebrum and cerebellum showed numerous irregular cavities filled with yeast-cells.

P. T

JIMÉNEZ (J. B.). Nota clinica acerca de tres casos de actinomicosis humana. **[Three Cases of Actinomycosis in Man.]**—*Gac. Méd. de Caracas.* 1925. June 30. Vol. 32. No. 12. pp. 180–182.

Actinomycosis in man in Maracaibo appears to have been first described in 1907 ; during the succeeding 6 years there were occasional cases, and after that none till 1921. The author here records three more. In the first the tumour involved the right maxillary region, in the other two the thorax. The second was not diagnosed till just before death. The third complained of ill-defined pain referred to the shoulder but for a long period no physical signs could be detected ; there was no fever or expectoration and, in fact, the patient was regarded as a "tuberculophobe" and a hypochondriac. Later, an abscess pointed at the ninth intercostal space in the posterior axillary line, the fungus was found and cultivated. It is said to be identical morphologically with *Discomyces bovis* and *D. israeli.*

H. Harold Scott.

CASTELLANI (Aldo), DOUGLAS (Mackenzie) & THOMPSON (E. T.). **Notes on Mixed Mycotic Infections of the Bronchi. The Mixed Monilia + Anaeromyces Infection.**—*Jl. Trop. Med. & Hyg.* 1925. July 15. Vol. 28. No. 14. pp. 257–261. With 6 text figs. [11 refs.]

In this paper simple broncho-moniliasis and simple broncho-anaeromycosis are first dealt with. Of broncho-moniliasis three varieties are distinguished, primary, secondary, and saprophytic, the virulence of the monilia isolated, when injected intravenously or intrapulmonarily into rabbits, differing in each variety. Monilias are placed in eleven groups in accordance with their action on certain carbohydrates. Broncho-anaeromycosis is hardly to be distinguished clinically from pulmonary tuberculosis or haemorrhagic broncho-moniliasis. Fungi of the genus *Anaeromyces*, which was created by the authors for the organisms isolated from certain chronic bronchitic conditions, are not pathogenic to guineapigs or rabbits. Several cases of apparently true mixed monilia anaeromyces infections have been met with. Both organisms are abundant while severe symptoms last and become scanty or disappear when the bronchial condition improves or is cured. The specific treatment for either broncho-moniliasis or broncho-anaeromycosis alone is ineffective, but a cure is effected by combining the treatments, and this is regarded by the authors as indicating the aetiological importance of both organisms.

P. T.

CASTELLANI (Aldo). **Bronchomycoses.**—*Milit. Surgeon.* 1925. Aug. Vol. 57. No. 2. pp. 113–133. With 12 text figs.

In a long general paper it is stated that bronchomycosis may be due to species of fungi belonging to seventeen genera, but in all cases the symptoms are somewhat similar. In mild cases there are signs of slight bronchitis, and in severe cases there are all the symptoms of phthisis. Ten varieties of bronchomycosis associated with fungi belonging to a corresponding number of distinct genera are dealt with in more or less detail. In connexion with bronchomoniliasis it is stated that the specific determination of monilias is only possible with recently isolated strains, as some species may lose the power of fermenting some carbohydrates after a time, and that monilias presenting the same biochemical reactions may differ greatly in pathogenicity. Three groups of monilias are distinguished: non-virulent strains which when inoculated into rabbits or guineapigs do not produce any sign of sickness; virulent strains which kill rabbits or guineapigs when injected intravenously or intrapulmonarily but do not produce a nodular condition of the lungs; and virulent strains which produce a nodular condition of the lungs when injected intrapulmonarily into rabbits. The mycoses associated with these strains are termed saprophytic, secondary, and primary bronchomoniliasis respectively. Two illustrative cases are described. Bronchonocardiasis is due to fungi of the genera *Nocardia* and *Cohnistreptothrix.* Two types are distinguished, granular and agranular according as fungal granules are present or not in the sputum. The agranular type is generally chronic, but the granular type is more amenable to treatment. Illustrative cases of both types are described.

An anaerobic fungus, *Anaeromyces bronchitica*, Castellani, Douglas and Thompson, belonging to the order Microsiphonales, was isolated from certain cases of bronchitis. It is not pathogenic for guineapigs, rabbits, or mice, but its aetiological importance in certain cases of bronchitis is indicated by the facts that it rapidly decreases in amount in the sputum as the bronchial condition improves and finally disappears; and that all symptoms disappear when an anaeromyces vaccine is used without any other treatment.

Bronchial oidiosis, saccharomycetosis, cryptococcosis, endomycosis, and williasis are also briefly dealt with.

P. T.

JAUMAIN (D.) & COLARD (A.). Sur les caractères d'un champignon du genre *Monilia* isolé dans un cas mortel de mycose pulmonaire, contracté au Congo belge. [**Characters of a Monilia isolated in a Fatal Case of Pulmonary Mycosis in Belgian Congo.**]—*C.R. Soc. Biol.* 1925. Sept. 30. Vol. 93. No. 28. pp. 858–860.

The authors describe what appears to be the first case of bronchomoniliasis reported from the Belgian Congo. The patient was an officer sent home suffering from an affection simulating phthisis, but the Koch bacillus was not found in the sputum, and inoculation of guineapigs was negative. Oval yeast-like cells, 4–5 microns long by 2–3 microns wide, with very refringent membranes, were present in the sputum. They were often united in pairs by slender necks. Cultures were obtained on Raulin's solution and on Sabouraud's glucose agar.

On solid sugar media, at the optimum temperature of 37° C., a thick creamy-white culture was developed in 24 hours, the colour of which scarcely changed with age. The biochemical characters are described in detail. The action on sugars was observed by adding some bromothymol blue to the medium and adjusting the pH to 6·7 before inoculation. The biochemical characters, especially its power of liquefying gelatine, separate it from any species described by Castellani. Intraperitoneal and subcutaneous injections of spore emulsions were innocuous to rabbits; but intravenous inoculation of one-tenth a 24 hours' culture on Sabouraud's medium was fatal in 24 hours, and a similar intra-pulmonary inoculation was fatal in about 48 hours. Cultures from the organs were positive in the fatal cases.

P. T.

Colard (A.) & Jaumain (D.). Sur un cas de moniliase pulmonaire. [**Pulmonary Moniliasis.**]—*Bruxelles Méd.* 1925. Oct. 18. Vol. 5. No. 51. pp. 1503–1506. With 1 text fig.

This paper is a detailed account, from the clinical aspect, of the case described by the same authors in the paper summarized above. Certain peculiarities of the radioscopic image, and various methods of treatment which were used ineffectually, are described. The termination was fatal.

P. T.

de Magalhães (Octavio). Mycose Pulmonar pelo " Oidium brasiliensis " (Oct. de Magalhães, 1912). [**Pulmonary Mycosis due to** *Oidium brasiliense.*]—*Sciencia Medica.* 1925. Nov. 30. Vol. 3. No. 11. pp. 659–672. With 11 figs. on 6 plates. [13 refs.]

The author gives an account of generalized infection with *Oidium brasiliense* in human cases naturally infected and in experimental animals. This mould was first noted in 1912 in Bello Horizonte. It grows in all the ordinary media but best on Sabouraud-maltose. It ferments all the usual sugars and liquefies gelatin in 12–14 days. Though it is often generalized in experimental inoculation there is a tendency to pulmonary localization. The disease produced may be acute or chronic. In the former there are fever, loss of appetite, persistent cough, wasting, diarrhoea, cavitation of the lungs, and nephritis, but no night-sweats and no haemorrhagic expectoration. In the chronic forms there may be a pleuritic type without fever at first; later, signs of consolidation of the lungs succeeded by breaking down of tissue to cavitation. There are sweats but not so copious as in phthisis. In others the type is more bronchopneumonic, with mucoid, muco-purulent, or blood-tinged expectoration, but no fever. At autopsy the signs are those of interstitial pneumonia with perhaps small abscesses; the kidneys may also contain purulent foci and there are haemorrhages in the spleen.

Experimentally, monkeys tend to develop the acute form; guineapigs and rabbits the more chronic. Mere insufflation has produced the disease in squirrel monkeys.

Diagnosis is made by recognition and growth of the mould, by a positive intradermal reaction with the Oidium and by complement-fixation tests. The prognosis depends upon accurate diagnosis. Treatment by potassium iodide, 2–4 gm. daily, gives the best results. Mercurial and arsenical preparations have no influence on the course of the disease.

H. Harold Scott.

Nasso (Ivo). Un caso di broncomoniliasi [**A Case of Bronchomoniliasis.**]—*Pediatria.* 1926. Jan. 1. Vol. 34. No. 1. pp. 37–42. [7 refs.]

A child, 8 years of age, was brought to hospital with acute abdominal pain, diarrhoea, a troublesome cough with blood-stained expectoration, and a history of wasting and increasing pallor. Erythrocytes numbered

1,500,000 per cmm., with haemoglobin 45 per cent. and leucocytes 7,400. *P. vivax* was found. From the sputum *Monilia pinoyi* was cultivated and this, injected intravenously, killed a guineapig and a rabbit. Treatment consisted first of quinine, later of arsenic and potassium iodide. The last was given by intramuscular injection. Considerable improvement followed, but a certain degree of pallor and irregular fever to 38° C persisted, the cough was reduced in frequency and the sputum no longer contained blood.

H Harold Scott

Cleland (J. Burton). **Aspergillosis of the Pleura with Sclerotium Formation.**—*Med. Jl. Australia.* 1924. June 28. 11th Year. Vol 1. No. 26. pp. 634–635.

In the material removed from an empyema following a gunshot wound in the right chest of a private soldier aged 22 years in the Coast Hospital, Sydney, numerous brownish sclerotia, 1·5 to 2 millimetres in diameter, were found. Numerous conidiphores arose at the periphery of the sclerotia, and terminated in ovoid formations 15 to 18 microns in diameter, from which arose numerous claviform sterigmata about 5·5 microns long. The spores were brownish, smooth, spherical and about 3·5 microns in diameter. The surface hyphae and the conidiophores were brownish. The fungus was not cultivated.

P. T.

YAWS AND SYPHILIS.

ARMSTRONG (John S.). **The Treatment of Yaws (Framboesia tropica) in Western Samoa.**—*Mandated Territory of Western Samoa, New Zealand, Ann. Rep. Dept. of Health for Year ended 31st March, 1925.* pp. 16–20. [9 refs.]

In an appendix of 5 pages J. S. Armstrong, R.M.O., Apia, deals with the progress of the anti-yaws campaign which was begun in November-December 1923. 351 males and 344 females received 1,892 treatments, 536 by three injections, 135 by two injections, 24 by a single injection; the standard treatment aimed at being three intravenous injections of 0·6 grammes N.A.B. at weekly intervals for an adult male and appropriate smaller doses for women and children and intramuscular injections for babies carried out by an itinerant treatment team consisting of an M.O. and assistants. Eight months later these cases were again examined and the results noted. The figures thus obtained were analysed; a condensed age incidence table yields the following figures:—1–5 years — 137; 6–10 years — 205; 10–15 years — 115; 15–20 years — 50; above 20 — 188.

"The cases were divided into the following types: (1) Primary sores; (2) generalized secondary papular rash; (3) dermatitis, secondary; (4) "crab" tonas; (5) secondary ulceration; (6) gummatous infiltration and ulceration; (7) synovitis; (8) dactylitis; (9) tibial nodes and sabre-blade tibiae; (10) dermatitis, slaty; (11) plantar and palmar dermatitis; (12) hyperkeratosis.

"The number of each type injected and the number of relapses is shown in the following table:—

	Type of Case injected.												Totals.
	1	2.	3.	4.	5.	6	7.	8.	9.	10	11.	12.	
	Cases receiving three injections.												
Number of cases injected	6	196	110	89	5	37	1	2	3	28	54	5	536
Number of relapses	5	32	6	8	—	2	—	—	—	—	—	—	53
Percentage of relapses	83	16·3	5·45	8·9	—	5·4	—	—	—	—	—	—	10
	Cases receiving two injections.												
Number of cases injected	1	41	30	22	2	14	1	—	—	9	13	2	135
Number of relapses	1	13	3	1	—	2	—	—	—	—	—	—	20
Percentage of relapses	100	41·4	10	4·5	—	14·3	—	—	—	—	—	—	14·8
	Cases receiving one injection.												
Number of cases injected	—	7	8	1	1	4	—	—	—	1	1	1	24
Number of relapses	—	2	2	—	—	—	—	—	—	—	—	—	4
Percentage of relapses	—	28·5	25	—	—	—	—	—	—	—	—	—	16·6

It is noted that groups (1) to (3), i.e., the contagious stages, are limited to children in the first decade; groups (4), (5), (7), (8) were seldom over 15 years.

"At the present time some 54,000 injections have been given on the three-injection system without causing a single case to become reinfected with yaws, so that it may be fairly safely assumed that we are not removing the immunity conveyed by an attack of the disease . . . At the present time we endeavour to keep an immune adult population, by merely treating cases sufficiently to cure the infective primary and secondary rashes, which may also prevent the occurrence of the disabling tertiary conditions. This we hope will allow a large proportion of the present children to reach adult life without becoming infected, and so gradually exterminate the disease without risking a serious epidemic of yaws amongst the adult population before we have the personnel to control it.

"The immunity which an attack of yaws gives the Samoans in preventing their infection with syphilis, seems to be very great, as we have never seen a case of syphilis in a Samoan."

[The quotations are given at length above as the deductions made may not be found to hold good. First with regard to the alleged immunity to syphilis. To prove that the Samoans are immune to that disease as the result of their having had yaws it would be necessary to show that they had had the chance of infection with syphilis and resisted it, whereas nowhere in this Annual Report is such evidence forthcoming; the only reference to that disease appears under the Public Health section to the effect that "the Chinese coolies have a small percentage of syphilitic cases, but there appears to be no evidence of their having passed the infection on to the Samoans." As to the adequacy of the three-injection system—a method which gives a 16·3 per cent. relapse rate in secondary cases within 8 months can hardly be looked upon as satisfactory and that it is wise to convert all these cases which have not relapsed into a possibly vast latent-infective population is open to doubt. What percentage of these children now with latent infections may be going to develop tertiary manifestations in later years? Only time will show. The same is true of the short-course treatment campaigns in East Africa and Dutch East Indies. No Wassermann reactions are reported. Referring to relapse no mention is made of the clinical signs on relapse; presumably the secondary cases showed further crops of granulomata, but it would be interesting to know whether the primary cases developed a secondary eruption. That none of the late palmar dermatitis and hyperkeratosis cases relapsed during the 8 months is rather what might be expected but is no criterion they will not do so later. The nomenclature used in the grouping of the cases may be criticized. No mention is made of cases of gangosa, J.A.N. or goundou. A point of interest is that to enable the campaign of treatment by N.A.B. to be carried out a £1 medical tax was levied on population but no mention is made of the cheaper bismuth preparations.]

H. S. Stannus.

McKenzie (A.). **Observations on Filariasis, Yaws and Intestinal Helminthic Infections in the Cook Islands with Notes on the Breeding Habits of** *Stegomyia pseudoscutellaris*.—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. June 18. Vol. 19. No. 3. pp. 138–149. With 4 text figs.

Cases of yaws numbering 200 were treated in twelve months. The age incidence is given as: under 1 year 23; 1–4 years 35; 4–8 70; 8–12 59; 12–20 26; over 20 59, sexes being equal. The primary yaw in

26 cases observed was sited as follows:—legs 11; face 10; ear 1; hand 1; chest 1; arm 2. The large number on the face is accounted for by a child's habit of picking at the nose, etc. In three of the leg cases the primary lesion was seen to develop at the edge of a traumatic ulcer; with treatment the yaw disappeared leaving the ulcer as it was before. The author believes that the primary lesion rarely appears at the site of a breach of surface which has healed aseptically. The secondary eruptions presented nothing unusual, initial fever and joint pains were not seen, neither was any desquamative condition ever found. The various affections of the soles of the feet produced by yaws are described. Tertiary manifestations (16 cases) included gummata of skin and bone and five cases of gangosa, all of whom responded well to N.A.B. Of 120 cases seen 11 months after treatment (N.A.B., total 1·2 gm.) none showed any clinical manifestation of the disease, but 2 cases, each 11 months after treatment, developed a typical primary yaw on a traumatic ulcer followed in 2–3 weeks by a secondary eruption. These cases the author considers to be reinfections and not relapses. In one case a Hunterian chancre and mucous patches in the mouth co-existed with a typical yaws eruption on the body.

H. S. S.

DUPUY (L.). Contribution à l'étude clinique et au traitement du pian. [**Clinical Study and Treatment of Yaws.**]—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 69–78.

In the extreme south of the Katanga 155 cases of yaws were dealt with in 3 years. The disease appeared to become epidemic towards the end of the dry season and affected the Ba-lamba and Ba-temba in certain villages on the Luapula river but rarely the Mulala people. The local name of the disease is *bonono.* There follows a general account of the clinical manifestations of the disease now well known and, under treatment, a plea for larger doses of N.A.B. to be used in routine treatment if cure without relapse is to be effected. Thus he advocates 3 or 4 injections or 0·75, 0·75, 0·9, 0·9 gm. at 4-day intervals. No case of gangosa, common in Haute Katanga, was seen in this southern area, but 2 cases of J.A.N. were noted.

H. S. S.

CALLANAN (J. C.). **Some Observations on Framboesia Tropica, made in a District of Kikuyu Province, Kenya Colony.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Nov. 19 & Dec. 17. Vol. 19. Nos. 5 & 6. pp. 312–316. With 4 figs. on 1 plate.

This paper, which is a summary of a thesis presented at Dublin, is a very valuable contribution to the study of yaws in East Africa. References to the subject matter of the thesis will be found in this *Bulletin,* 1926, Vol. 23, pp. 9–10.

H. S. S.

NUNEZ (Solon). **Suspected Yaws in Costa Rica.**—*Amer. Jl. Trop. Med.* 1925. Nov. Vol. 5. No. 6. pp. 425–428. With 1 text fig.

On receipt of the report by FALLAS and von BÜLOW of suspected cases of yaws at Puntarenas which formed the subject of a paper reviewed in this *Bulletin* (*ante,* p. 16), the author, accompanied by

Dr. Taylor, chief of the laboratory of public health, proceeded there to observe them, but he adds nothing to the previous article except a photograph of the single patient he saw. It represents a man with a condition which certainly resembles yaws. It will be remembered, however, that the description of the evolution of the eruption was not typical, that microscopical examination of the exudate from the lesions was negative but that the Bordet-Wassermann reaction was positive and the results of treatment by neosalvarsan immediately successful.

H. S. S.

Ayuyao (Conrado D). **Tertiary Manifestations of Yaws in the Larynx.** —*Jl Philippine Islands Med. Assoc.* 1925. Nov. Vol. 5. No. 11. pp. 331–336. [19 refs]

Two cases are reported, a girl and a boy, aged respectively 11 and 12 years, with a history of yaws 3 and 9 years before onset of illness commencing with cough followed by pain in the chest, sore throat, hoarseness and in the case of the boy urgent dyspnoea for which tracheotomy was performed on three occasions There was some general adenitis in both cases but both were afebrile and no symptoms appeared except those localized to the nasopharynx and larynx. Wassermann reaction weakly positive in both, the blood being taken just after first treatment had been given

The lesions in the girl are thus described .—

"*Localized lesion* —Pharynx and larynx, the faucial pillars are worn out and so is the soft palate, the uvula being absent The faucial tonsils are moderately enlarged and present many ulcers The posterior pharyngeal wall presents also ulceration and cicatrice is being formed. The epiglottis is markedly ulcerated, so much so that it is reduced to a mere stump The arytenoids are infiltrated The vocal cords are much ulcerated, the left absent The ulcers as a rule have clean-cut edges with a low degree of inflammation around them and with dirty whitish exudate covering the base "

Those in the boy as follows :—

"*Localized lesion* —Pharynx and larynx, the faucial tonsils absent. The uvula presents a small ulcer at its tip and a larger one at its left side. There are two other ulcers over the soft palate, much larger than those of the uvula They are circular in shape with undermined edges The pharynx presents similar but small ulcers These ulcers are covered with dirty whitish exudate not pus The surrounding tissue shows a low degree of inflammation. The right vocal cord is practically fixed in its place and the left can move to a limited extent Both cords are much thickened and just below them are thick infiltration and granulations, producing stenosis of the lumen The arytenoids also show infiltrations. "*Nose* —There is a small swelling, with slight tenderness over the left nasal bone This swelling is not congested and is connected with the bone itself The turbinates show some degree of infiltration "

Both were treated with neoarsphenamin with good results. There was no history of syphilis or tuberculosis in the parents [no mention of W.R.] but on X-ray findings in the case of the boy a diagnosis of pulmonary tuberculosis was made though the sputum was negative for tubercle bacilli.

The author then discusses the possible relationship of his two cases with gangosa, and though in case 2 his first diagnosis was that disease, he prefers to consider both his subjects as cases of "Tertiary Manifestations of Yaws in the Larynx"—the first to be described. [There would, however, appear to be no reason why they should not be placed among those cases called gangosa leaving aside for the moment the question of the etiology of that condition.]

H. S. S.

VAN DEN BRANDEN (F.). L'emploi du stovarsol dans le traitement des affections pianiques. [**Stovarsol in the Treatment of Yaws.**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 111–118. With 11 charts.

After pointing out the necessity of pushing the treatment of yaws up to the point when the Wassermann reaction is negative and not merely being content to see the clinical manifestations disappear this observer from the Congo gives his experience with stovarsol in the treatment of 13 cases of yaws, using doses a good deal larger than have been hitherto advocated. Commencing with 1 gramme, 1½, 2 and 3 grammes are given on successive days (for children half these doses) and dosage is kept up till a total of the drug given in gramme weight equals the weight of the individual in kilos. Among 11 of the 13 cases in which the Wassermann reaction was performed, in 7 the reaction became negative and in 4 it remained positive at the end of treatment, even after 54 grammes stovarsol in one case. He believes that in stovarsol we have a drug equal to N.A.B. and owing to ease of administration, etc., one which is superior in some respects.

H. S. S.

LEFROU (G.). Contribution à la posologie du stovarsol: le stovarsol à doses hebdomadaires dans le pian. [**Dosage of Stovarsol: its Administration weekly in Yaws.**]—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8 pp. 661–669. [3 refs.]

The method here under consideration consists in the administration at weekly intervals of doses of stovarsol of 0·075 gm. to 0·08 gm. per kilo weight of patient with a maximum of 4·5 gm., dissolved in water in the morning before food. This works out at from 14 to 18 tablets of 0·25 gm. Three doses are given. A few days after the second dose all activity in the lesions had ceased and in the majority of secondary cases of yaws all lesions had disappeared. These cases (20) were only under observation for a few weeks but are spoken of as cures. No Wassermann reaction performed. The object of the paper is to draw attention to this method of administration of larger doses at longer intervals.

H. S. S.

i. IRVINE (A. C.). **Bismuth in the Treatment of Yaws.** [Correspondence.]—*Kenya Med. Jl.* 1925. Dec. Vol. 2. No. 9. pp. 271–272.

ii. ——. **Syphilis or Yaws.** [Correspondence.]—*Ibid.* p. 273.

i. The author's impression is that under 1 per cent. of 2,500 cases of yaws treated [dosage not stated] return for treatment, which the author believes corresponds with the relapse rate.

ii. Regarding the question whether yaws and syphilis are different entities or one and the same disease the author points out, in favour of the former opinion, that the age incidence is entirely different for the two diseases in the province of Kenya in which he has been working.

H. S. S.

GUTIERREZ (Perpetuo D.) & VILLASENOR (Pedro N.). **The Duality of Yaws and Syphilis.**—*Jl. Philippine Islands Med. Assoc.* 1926. Jan. Vol. 6. No. 1. pp. 5–11. [13 refs.]

In this contribution to the discussion upon the unity or duality of yaws and syphilis, the authors, who side with the majority of authorities in believing in separate disease entities, pass in review under the headings of geographical distribution, age, social condition, transmission, etiology and clinical manifestations, the facts as already well known. Sections on histopathology, serology, experimental transmission follow but contain no essentially new data. In that the histopathology of yaws has received but little attention of late years the quotation from MACLEOD (*Brit. Med. Jl.* 1901 Vol. 2, p. 797) is given below, with the suggestion that repetition of this research would be useful.

" Epidermis.

" There is a marked proliferation and downgrowth with elongation of the rete pegs.

" There is swelling, vacuolation and degeneration of the epithelial cells with some edema of the interepithelial spaces.

" Not infrequently there are sharply circumscribed areas in the epidermis containing collections of polymorphonuclear leucocytes and detritus (the miliary abscesses) in which spirochaetes are not infrequently found.

" Basal layer uninterrupted.

" Disappearance of pigment in the affected areas.

" Transitional layers imperfect.

" Cornification, marked hyperkeratosis and parakeratosis with deposition of leucocytes and débris between horny lamellae.

" Changes in the corium.

" 1. Blood vessels are dilated, there is no thickening of the vessel walls or endothelial proliferation. Blood vessels persist even in the middle of the granuloma.

" 2. Cellular infiltration consists of plasma cells most marked around the blood vessels and glands. The infiltration rapidly becomes diffuse, there is no tendency for it to be localized, there is no definite arrangement of the plasma cells in rows, there are no giant cells, there is no tendency to organization.

" 3. The fibrous stroma is thinned where infiltration is most marked.

" 4. The appendages are not affected.

" MacLeod further differentiates yaws from syphilis histologically, and says :—

" (*a*) Cellular infiltration. The plasma cells are not definitely clustered around the vessels in yaws as they are in syphilis, nor do they ever form foci suggesting tuberculous nodules, as they do occasionally in the latter disease. They are seldom arranged in rows, which frequently occurs in syphilis. Large multinuclear cells (chorioplaques) and true giant cells which may be present in syphilis, are absent. No hyaline degeneration, such as may be found in syphilis, is detected in the plasma cells.

"(*b*) Fibrous stroma. The rarefaction of the collagen is more marked in yaws than in syphilis; organization is not detected, and colloidal degeneration such as occurs in a syphilitic gumma, is absent.

"(*c*) Epithelium. The proliferative changes in the epidermis in yaws are not only equalled in syphilis in the condylomata, while the marked tendency of the stratum corneum (hyperkeratosis), which is an invariable characteristic in yaws, is unusual in syphilis."

H. S. S.

GOODMAN (Herman). **Generalized Cutaneous Syphilis.: Clinical Differentiation. III. Frambesia Tropica and Syphilis. A Comparison with Especial Reference to the Treatment of Paresis with Malaria.**—*Amer. Jl. Syph.* 1926. Jan. Vol. 10. No. 1. pp. 64–88. With 36 text figs.

Claiming the "good fortune to have had actual clinical experiences with both diseases in the tropics and in temperate zones", the author gives a rather rambling account of the two diseases containing nothing new and no observations of interest. He believes that there is no tertiary phase in yaws without giving the evidence upon which he bases this opinion. This and some other opinions expressed by Dr. Goodman would not meet with general acceptance. No statistics and no geographical data are given.

H. S. S.

NICHOLS (Henry J.). **Experimental Immunity in Syphilis and Yaws.**—*Amer. Jl. Trop. Med.* 1925. Nov. Vol. 5. No. 6. pp. 429–437. With 2 text figs. [11 refs.]

Adverting to the opinion expressed by PARHAM that the Samoans are protected from syphilis by previous infection with yaws and to explanations which might be offered for any such possible cross-immunity between the two diseases, the author refers to the history of experimental infections in rabbits by *T. pertenue* and *T. pallidum* and to some recent work by CHESNEY and KEMP. These authors showed that if an infection of syphilis has persisted in a rabbit for over three months and the rabbit is then treated with arsphenamin and cured as has been shown possible, the animal is then immune and cannot be successfully reinoculated with syphilis. These results go to prove that, contrary to the old idea that resistance to inoculation is an evidence of latent infection, there is a true immunity after the infection is cured, the important point being the length of time which the infection has persisted in the animal: if animals are tested early in the disease a large number of them can be reinfected; if treated late they are nearly all immune. The author therefore carried out a series of experiments to show whether this time factor entered into the cross-protection of yaws against syphilis. Though their number was small and the evidence not absolutely complete the results go to show that experimentally a partial immunity against syphilis can be demonstrated in rabbits which have been infected a long time with yaws and then cured by arsphenamine—this being comparable, it is suggested, to some true immunity to syphilis in those who have suffered a long course of untreated yaws in childhood. As to the identity of the diseases the experimental protection of syphilis against itself is so much stronger than that of yaws against syphilis that the argument fails. The author alludes to some interesting facts that have come to light while working with various strains of *T. pallidum* and *T. pertenue*, namely the definite varieties of strains met with and the fact that each strain will in each passage produce its particular and characteristic type of lesions in the inoculated animal.

H. S. S.

IKEGAMI (Yutaka). [**Studies on Experimental Framboesia. Communication I.**]—*Hifuka Kiyo* (*Arch. of Dermat.*). 1925. Apr. Vol. 5. No. 3. [Summarized in *Japan Med. World*. 1925. Dec. 15. Vol. 5. No. 12. pp. 365–366.

Records the successful inoculation of a rabbit (scrotum) from a yaws papule in a South Sea Island boy with development of a papular lesion and passage through three generations.

H. S. S.

VOEGTLIN (Carl) & DYER (Helen A.). **Reinoculation as a Criterion of Cure of Experimental Syphilis, with Reference to Arsphenamine, Neoarsphenamine, and Sulpharsphenamine.**—*Public Health Rep.* 1925. Nov. 13. Vol. 40. No. 46. pp. 2511–2519. [8 refs.]

As a matter of interest associated with the research described in the title of this article, a series of experiments was made to determine whether rabbits which had been previously inoculated with a syphilitic virus and then treated with the above-mentioned drugs (as in those to be tested with reinoculation of *T. pallidum*, would react to inoculation with *T. pertenue*. Results showed that such animals may be resistant to this reinoculation with *T. pertenue* as to *T. pallidum*. These findings are, however, difficult to interpret in the absence of other investigations. Successful cross inoculation (first syphilis then yaws) in a monkey has been described by NEISSER and co-workers. If a similar result could be obtained in untreated rabbits it would indicate that the treated rabbits, on account of treatment, had developed a refractory state, as far as the production of a local lesion is concerned, to inoculation with *T. pertenue*.

H. S. S.

GANTER (M.) & KUIJER (A.). Syphilis van het Colon Transversum. [**Syphilis of the Transverse Colon.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 6. pp. 766–772. With 2 figs. on 1 plate.

A Javanese soldier showed symptoms of obstruction of the intestine with a tumour in the left upper abdomen and serious emaciation. Though syphilis was denied and the Sachs Georgi test was negative, specific treatment, tentatively applied, first with potassium iodide, later with mercury and arsphenamine, brought about a complete recovery. The course of the X-ray examination is described in detail and illustrated with two pictures.

W. J. Bais.

MULDER (D. G.). De invloed der moderne kultuur op het verloop der syphilis bij den Soendanees. [**The Influence of Modern Culture on the Course of Syphilis in the Sundanese.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 6. pp. 816–820.

This is an abstract of the author's MD. thesis. Many obstinate and malignant diseases of modern man are rare or absent in the primitive aborigines of tropical countrris (diabetes, gout, blood diseases, tabes, paralysis of the insane, etc.). Taking syphilis as an example, Mulder thinks that its course is materially modified in the modern native of somewhat higher standing in comparison with the village man, especially as regards the greater frequency of parasyphilis in the former. He states that modern chemical treatment interferes with the tendency to natural immunization which the disease itself possesses.

W. J. Bais.

ZUR VERTH (M.). Zum Problem der juxtaartikulären Knoten-bildungen. [**Juxta-articular Nodules.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 400–404.

The author believes that both yaws and syphilis may be causative factors in the condition known as juxta-articular nodules, and noting the comparative rarity of the affection in Europeans, gives a résumé of a case under his own care in 1923—a ship's engineer aet. 47 with typical nodes about the elbows who had contracted syphilis in 1907 and received practically no treatment. The nodules appeared in 1917 while the man was a prisoner in Malta. Wassermann reaction was +++ and a syphilitic psoriasis appeared on the arms. A nodule was excised and sections reported on by Professor FAHR. They showed hyaline fibres with collagenous change, and infiltration by lymphocytes and plasma cells; perivascular infiltration was also noted, pointing to a syphilitic etiology. The part played by trauma is discussed and notes of a second case are given—an orthopaedic mechanic aet. 30 with lesion of elbow and finger; Wassermann reaction negative and syphilis excluded. A nodule excised gave similar findings. Reference is then made to HAUCK, who described "subcutaneous fibrous nodules on the dorsal surfaces of the first interphalangeal joints of the fingers" (*Med. Klin.* 1924, p. 1569) as not very rare in his surgical clinic in Berlin, the condition chiefly affecting the ulnar side of the joint of the middle finger, though any finger of either hand may be the seat of nodules, the exception being the thumb; they may develop at the same time or appear at intervals; they are rounded or oval in shape, microscopically composed of fibrous tissue, and do not return after removal. Reference is also made to a case by KONJETZNY and to the condition called akrodermatitis chronica atrophicans in which JESSNER has described subcutaneous nodes about the elbows and fingers (*Arch. f. Dermat. u. Syph.* Vol. 134, p. 486 and 294) and to which the author finds his cases bear some analogy. No references are given to any but German authors.

Professor zur Verth does not go so far as to pronounce the nodules in his cases to be identical with those met with in the tropics but he believes the underlying causes are closely allied. [This opinion has been put forward by others. Generally stated the idea is that these nodules are formed as the result of a tissue reaction to a local deposit of organisms, be they the spirochaetes of yaws or syphilis or some other living parasites, the reaction being in some degree determined by racial peculiarity (maximum fibrous tissue reaction of black races), the sites being determined by trauma in some form—actual injury, pressure, over-use of joint, etc. On the other hand, other observers believe that there are a number of disease entities characterized by nodule formation which should be distinguished from J.A.N., a condition *sui generis* of unknown causation or possibly due to yaws, and that these several conditions may be distinguished histologically if not clinically.]

H. S. S.

GENNER (Viggo). Sur l'étiologie des nodosités juxta-articulaires. [**Etiology of Juxta-Articular Nodules.**]—*Ann. de Dermat. et de Syph.* 1925. Nov. 6th Ser. Vol. 6. No. 11. pp. 675–681. With 3 figs.

Working in the island of Nias, near Sumatra, the author had through his hands some four to five thousand native patients among whom were 2,000 cases of yaws but no case of syphilis. His attention was attracted to the large incidence of J.A.N. among his yaws cases, which indeed amounted to 5–10 per cent. The nodes were found for the most part about the ankle joints—a distribution which is attributed to the factor of trauma caused by the wearing of heavy anklets. Notes were made of 40 cases of J.A.N.; all had had yaws and all responded in some degree to treatment with N.A.B. No cases were seen among children. The author believes in a yaws pathogeny. Nodes from four cases were examined histologically; spirochaetes were not found. The nodes consisted for the most part of dense fibrous tissue with areas of fibroblasts. The tissue showed in places hyaline changes. The epidermis and true skin were thinned immediately over the tumour and an infiltration by lymphocytes and plasma cells around the sweat glands was found.

H. S. S.

JORDAN (Arthur). Gelenkerkrankung und juxta-artikuläre Knoten infolge von unerkannter Syphilis. [**Affection of Joints and Juxta-Articular Nodules following Unrecognized Syphilis.**]—*Dermat. Ztschr.* 1925. Nov. Vol. 45. No. 5-6. pp. 263–270. With 2 figs. [25 refs.]

After referring to the difference of opinion which various observers hold regarding the incidence of joint lesions as opposed to bone affections in inherited syphilis, the author points out that on the whole they are rare conditions, though commoner in some countries and among some races than in others. He then cites the case of a peasant woman aged 50 who during a period of 5 years successively developed bone pain in the shins worse at night, swelling about the knee joints, fingers and wrist joints, a breaking down swelling of the left shin and finally hard painless moveable subcutaneous nodules from a pea to a hazel nut in size in the neighbourhood of the elbow joint. The previous history was good—5 children all alive, no abortions, no history of syphilis, but the Wassermann reaction was marked by positive and von Pirquet negative. Here then were associated a gummatous ulceration over tibia and periarthritis of finger joints, wrists and knees causing complete disability owing to pain, limitation of movement and muscular wasting and as shown by X-ray examination a diffuse atrophy of all the bones of both hands but no change in joint surfaces—with a condition resembling juxta-articular nodules. After eleven injections of the Russian bismuth preparation Bijochinol followed by yatren and pot. iod., function was restored in great part to all the joints, pain and swelling relieved and almost complete disappearance of the nodules was effected. The rest of the article is given up to references to cases, described by other authors, of syphilitic arthritis and should be consulted by all interested. Jordan refers to the histological picture presented in sections of two nodules from his case. In one the structure resembled a gumma, in the other the resemblance to subcutaneous sarcoid was noticeable.

Thus has arisen the confusion which exists in dealing with the conditions which have been named syphilitic subcutaneous fibromata, subcutaneous sarcoid and juxta-articular nodules.

H. S. S.

BERNARD (R.) & BRODEN (A.). Un cas de nodosités juxta-articulaires asymétriques chez un Européen au Congo Belge. [**A Case of Asymmetric J.A.N. in a European in Belgian Congo.**]—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 25–32. With 2 figs. on 1 plate.

The authors report what they believe to be the tenth case of this condition occurring in Europeans, in a man of 32 years of age with some 12 years' service in Africa, in whom the nodules appeared about the left elbow after 5 years' residence. Some of the nodules had softened and discharged their contents, leaving papery depigmented scars. There was no history of syphilis or yaws but the Wassermann reaction was fully positive. A long series of injections of sulpharsenol resulted in diminution in size of the remaining node and the Wassermann reaction became negative. The site of the lesions they point out coincided with a site of trauma as the patient in his work always leaned on this elbow.

H. S. S.

BERNARD (R.). Les nodosités des saillies osseuses. [**Nodules of Bony Prominences.**]—*Bruxelles-Méd.* 1925. Dec. 13. Vol. 6. No. 7. pp. 212–215. [30 refs.]

An article on juxta-articular nodules drawing the attention of those who may not have access to the literature on tropical medicine to this well known condition, but containing nothing new.

H. S. S.

THIERFELDER (M. U.). Beiträge zur Kenntnis des venerischen Granuloms. [**Notes on Venereal Granuloma.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Dec. 16. Vol. 29. No. 12. pp. 690–698. With 2 text figs.

This communication is based on six cases of generalized (extragenital) tertiary granuloma venereum of which three are reported in detail.

Case No. 1 showed a liver abscess (right lobe) which had developed about six months after the primary infection which had progressed to a condition necessitating operation for phimosis: from the abscess pure cultures of "Microbacterium granulomae" were obtained. The abscess was opened and drained. Healing followed the antimony injections so that the patient discharged himself from hospital. Three months later new granulomas were observed about the face and right submaxillary gland region in addition to a breaking down of the formerly healed and healing lesions. Eventually complete cure was obtained under specific therapy.

Case No. 2 presented granulomas on the left labium minus, on the forehead and beneath the angle of the right lower jaw, which lesions had commenced some 12 months after the primary infection. From the forehead a large sequestrum was removed. The general condition was so poor that a fatal result appeared imminent, though the patient gradually recovered under Stibenyl-Heydon injections.

Case No. 3 developed granulomas about the right ear with the largest tumour over the mastoid area, inside the aural meatus, beneath the right lower jaw and on the right side of the neck, some 6 years after the primary infection. All the tumours healed under specific antimony treatment.

The three other cases, still under treatment, showed granulomatous lesions respectively on (4) the right side of the thorax and beneath the right clavicle, (5) on the back over the right kidney region, (6) on the right index finger. A commentary emphasizes that (*a*) all these six cases had developed in association with a long persisting small primary genital lesion without any apparent secondary stage, (*b*) insufficient treatment had been administered for the primary lesion, (*c*) these tertiary granulomas did not yield so readily to specific treatment as is customary in the case of the ordinary genital tumours. Points (*a*) and (*b*) suggest either an infection of avirulent organisms or/and a lowering of their virulence by insufficient treatment. The peculiar apparent preference of the lesions, in the cases here reported, for the right side of the body is noted.

W. Jenkins Oliver.

CORNWALL (Leon H.) & PECK (Samuel M.). **Etiology of Granuloma Inguinale with a Clinical Report of Three Cases.**—*Arch. Dermat. & Syph.* 1925. Nov. Vol. 12. No. 5. pp. 613–628. With 13 text figs. [6 refs.]

Three cases (2 male, 1 female) are reported occurring in negroes. The histological appearance of the granuloma is compared with that of chronic varicose ulceration, the difference noted being "chiefly in degree." The cultural appearances of the organism, from smears, grown on Sabouraud's and agar media are described and figured. Intracutaneous inoculations of a culture into two rabbits gave positive results, being negative in the case of three guineapigs. "The organism isolated has a characteristic morphology in young cultures on Sabouraud's medium. This morphology disappears in old cultures, and is not reproduced in subcultures."

W. J. O.

VISWALINGHAM (A.). **Granuloma Venereum.**—*Jl. Trop. Med. & Hyg.* 1925. Aug. 15. Vol. 28. No. 16. pp. 302–304. With 4 text figs.

Contains a brief account of the disease in Malaya and short reports of three cases. The oral administration of antimony tartrate combined with potassium iodide is recommended in association with intravenous antimony injections. The writer employed the following prescriptions: Pot. Iod. gr. 30, Ant. Tart. gr. ½, Aq. Chlorof. 1 oz. t.d.s. The potassium iodide in this mixture might be increased to 60 gr. and the tartar emetic to 1 gr.

W. J. O.

Alberto Cardona (C.). Granuloma Venéreo. [Granuloma Venereum.]—*Repert. Med. y Cirug.* 1925. Oct. Vol. 17. No. 1 (193). pp. 22–37. [5 refs.]

The author gives a fairly detailed account of Granuloma venereum and of the *Calymmato-bacterium granulomatis* and briefly describes the points of difference between this disease and various manifestations of syphilis, soft chancre, papilloma, actinomycosis and blastomycosis. He finds that the best treatment is by injections of 1 per cent. tartar emetic, starting with 5 cc. and increasing by 1–2 cc. every three days to a maximum of 12 cc. For women the initial dose is reduced and the maximum should not exceed 10 cc. He quotes six cases, five of which were syphilitic and yielded to arsenicals; the remaining one was a mixed syphilis and venereal granuloma and a combination of tartar emetic and antisyphilitic treatment was needed.

H. Harold Scott.

Falkner (Hope) Venereal Prophylaxis. Its Meaning and Effects. [Abstract.] —*Monthly Bull. of the Eastern Bureau.* League of Nations. Health Section. 1925 Apr. 20 Year 1. No. 1. p. 22.

HEAT STROKE.

HOPKINS (Frederick S.). **Unusual Case of Heat Prostration.**—*Boston Med. & Surg. Jl.* 1925. July 30. Vol. 193. No. 5. p. 221.

Heat stroke with a body (rectal) temperature of 110° F. is unusual and recovery from such a temperature rare. The case was seen on June 6th 1925.

F. K., aged 50, a Lithuanian labourer, was found in a freight house unconscious and relaxed. Skin hot and dry and cheeks covered with vomitus. He was taken to the Springfield Hospital. Rectal temperature, 110° F. He was packed in ice, and a continuous colonic irrigation with iced water was used. Within 30 minutes the rectal temperature was 93° F. The temperature rose again in spite of cold sponge baths and reached 105° F. Ice packs and irrigation of the colon caused another sudden drop to 94·6° F. A third rise occurred at night—10·45 p.m.—when a maximum of 105° F. was followed by a drop to 97° F. Tetanic convulsions lasted through the night. During the next few days there were rises of temperature, yielding to ice packs. The patient was fairly conscious but irrational and excitable, with hallucinations. For two days he had to be strapped to his bed [these symptoms might have been checked by morphia]. His mental symptoms cleared on the seventh day, and thereafter he made an uneventful recovery. [*v.* this *Bulletin*, Vol. 20, p. 69 (ALEXANDER); Vol. 18, p. 260 (PATTISON); Vol. 16, p. 63 (HEARNE & others); Vol. 11, p. 169 (GAUSS & MEYER); Vol. 9, p. 170 (HILL).]

J. H. Tull Walsh.

UNITED STATES NAVAL MEDICAL BULLETIN. 1926. Jan. Vol. 24. No. 1. pp. 145–154.—**Heat Cramps and Heat Exhaustion on Board Ships of the Navy in Recent Months.**

Fifty-six cases of heat cramps or heat exhaustion, most of them cramp cases, were reported by the U.S.S. *Wyoming* as occurring among members of the fireroom force in the month of June (1925). "Heat cramps" and "Heat exhaustion" are the two titles provided in the United States Navy Nomenclature of Diseases to cover all cases of disability attributed to high temperatures of the air, exclusive of sunstroke. Such unusual morbidity led to a request for information as to the conditions under which these cases had occurred. The information was furnished by the senior medical officer of the *Wyoming*. A table is given (pp. 146–147) of all admissions due to heat or to heat and laborious work on all vessels of the Navy for 1924 and for 1925 up to July 6th. The characters of the duty performed by any vessel in one year may be very different from that performed in another so far as it is related to heat hazards. All factors which have a bearing on the physical condition of the personnel, at the time cases of heat exhaustion or cramps are occurring, must be taken into consideration. In the *Utah's* report it was stated that a large percentage of the men were very young and many of them had but little experience in firing when called upon for maximum work. In the case of the *Arkansas* the average physique of firemen was reported as low; the average temperature of the outside air during the trial was 75° F; the average temperature in the engine rooms was 114° F.; in the firerooms 95° F. These two reports are exceptional. Reports from practically all other ships indicated that the men in both firerooms and engine rooms were experienced and in excellent physical condition. Signs of fatigue were noted on the destroyer *Lamson*. She underwent a 24-hour trial, January 5th, 1925, in Cuban waters. Outside temperature 80° F., temperature in firerooms between 120° and 127° F ; in the engine rooms 110° to 114° F. The symptoms, lasting about 48 hours, reported in heat cramps, were fever, usually about 100° F., moderate tachycardia severe cramps in the abdomen and extremities, and, occasionally, vomiting. In the few heat exhaustion cases the patients were prostrated when admitted, with subnormal temperatures, cold moist skin, rapid pulse, no cramps.

J. H. T. W.

PARRINO (G.). I Poteri immunitari dell' organismo nel colpo di sole e nel colpo di calore sperimentale. [**The Possibility of producing Immunity in Experimental Sun and Heat Stroke.**]—*Ann. d'Igiene.* 1925. Apr. Vol. 35. No. 4. pp. 348–366. [21 refs.]

This paper is more or less academic and not very convincing. Guineapigs exposed to high temperatures were injected with non-lethal doses of *B. typhosus* and anti-anthrax vaccine. Their resistance to heat was diminished. Some died, some survived. The controls lived. Pigeons and rabbits were somewhat similarly treated. Those interested might read the detailed experiments.

J. H. T. W.

MACNAUGHT (W. W.). Heat-Stroke: Hyperpyrexia: Recovery. [Memoranda]—*Brit.Med. Jl.* 1923. Dec. 1. p. 1042.

VON SCHROETTER (Hermann). Considérations théoriques et pratiques sur le coup de chaleur.—*Rev. d'Hygiène.* 1924. Jan. Vol. 46. No. 1. pp. 38–45. [1 ref]

TROPICAL OPHTHALMOLOGY:

A REVIEW OF RECENT ARTICLES.—V.*

THE EYELIDS.—M. AZMY EL KATTAN[1] speaks highly of an operation for *ptosis* which he learned at Moorfields Hospital. A bridge of skin, running parallel to the lid border and about five millimetres distant from it, is raised from the surface of the upper eyelid. This bridge is divided at its centre so as to form two strips, one of which is attached at the inner side of the lid and the other at the outer. Two short incisions are then made through the tissues just below the eyebrow, each of these being placed directly above the attachment of a strip. The incisions are carried right on to the orbital margin, and the skin is undermined. A narrow-bladed scalpel is passed beneath the skin of the lid so as to form tunnels running between the incisions and the corresponding strips of skin. Each skin strip is then drawn into its proper tunnel, and its tip is caused to emerge through the incision beneath the brow. The next step is to anchor the end of the strip to the occipito-frontalis muscle. This is effected by passing a suture deeply into the skin and tissues about 5 mm. above the incision. The needle is made to emerge through the incision, and is then passed twice through the end of the skin strip. It is re-entered through the incision, passed through the deep tissues, and brought out close to the point of its original entry. The suture is now tied over a rubber tube, or other guard, and the edges of the wounds are united by stitches. It is stated that no trouble due to the formation of implantation cysts has been experienced.

MACCALLAN and PÉRETZ[2] are of opinion that *trichiasis*, or the faulty direction assumed by the eyelashes as a sequel of trachoma, is due to a marked hyperaemia of the lid border rather than to a cicatricial process Extra cilia, which grow in different directions, develop; and those which turn inwards towards the globe cause the complications associated with trichiasis. With respect to the surgical treatment of the condition, they lay down the following general principles:—(1) Except in urgent cases, in which the trichiasis is causing corneal ulceration, the associated trachoma or catarrhal conjunctivitis should be first treated; (2) the use of clamps, which obstruct access to the angles of the field of operation, should be avoided and a spatula be used to fix the lid; (3) any removal of the skin of the lid should be avoided; (4) a partial operation should never be performed, even though only a limited portion of the lid border is affected by the trichiasis; (5) the deformity should be over-corrected if cicatrization is incomplete; (6) local anaesthesia should be employed except in the case of children, and a weak solution of adrenalin should be then injected into the lid. [N.B.—Such injection should be made before the anaesthetic is administered; otherwise it might prove dangerous.] Van Millingen's operation, in which a strip of mucous membrane, taken from the lip, is grafted into a groove made on the ciliary border, Streatfeild's, in which a wedge-shaped piece of the tarsus is removed, and the combined excision of the tarsus and retrotarsal fold are the surgical measures recommended by the authors.

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* For the fourth of this series see Vol. 22, pp. 947–955.

[1] AZMY EL KATTAN (M.). An Operation for Ptosis.—*Bull. Ophth. Soc. Egypt.* 1925. pp. 30–36. With 6 figs.

[2] MACCALLAN & PÉRETZ. Le traitement chirurgical du trichiasis et de l'entropion d'origine trachomateuse—*Revue du Trachome.* 1925. Oct. Vol. 2. No. 4. pp. 127–134. [1 ref.]

THE CONJUNCTIVA.—MOTAIS[3] has noted that out of 706 blind eyes examined by him in Cochin China, 409 (57 per cent.) had been lost as result of *purulent ophthalmia*. Trachoma accounted only for 25 of the losses (4·5 per cent.). This observation rather strikingly contrasts with LING's estimate that trachoma is responsible for 37·5 per cent. of the blindness amongst Chinese patients. In Cochin China 90 per cent. of the purulent ophthalmia is due to the gonococcus. A rise in the incidence of Koch-Weeks catarrh is observed at the beginning and the end of the hot weather. Gonorrheal ophthalmia frequently spreads through a family by contagion from eye to eye. MOTAIS looks on protein therapy as the mainstay in the treatment of the disease, and he now employs injections of boiled milk instead of vaccines. 8 cc. is injected beneath the skin of the abdomen in the case of an adult man, 6 cc. in the case of a woman, and 4 cc. in a child. He deprecates the use of strong solutions of silver nitrate, and prefers to employ eyebaths of a mild solution applied in the reclining posture. [He does not mention the use of 10 per cent. magnesium sulphate lotion in an eyebath —a treatment the reviewer has found most valuable.]

M. C. PFUNDER[4] reports a case of *Primary tularemia of the conjunctiva* in a farmer who apparently infected himself when removing some wood ticks from his horses. Two days later conjunctivitis with ulceration occurred. Very marked lymphangitis with constitutional symptoms were present, and a fortnight later the patient's serum, in a dilution of 320, was positive for tularemia. When seen forty days after the onset of the disease, the eye was still chemotic, the preauricular gland was much enlarged with areas of softening, and the lymphatic channels between the eye and the gland were greatly thickened. The rabbits upon the patient's farm in Montana appear to have been suffering from a severe epidemic disease.

Trachoma. Amongst novel forms of treatment for trachoma COLLIN and SCHWEISGUTH[5] report their experience of subconjunctival injection of iodine vapour. Warmed air is blown by a bellows, such as that used in a Paquelin's cautery, over the surface of iodine tincture contained in a bottle. The resulting vapour passes through a rubber tube to which is attached a fine hollow needle. The needle is inserted in the superior fornix immediately behind the upper edge of the tarsal plate, and the vapour is pumped very gently into the tissues. Treatment is repeated every three, four, or five days, according to the degree of reaction produced. The reaction is stated always to be much less than that which follows an injection of cyanide of mercury or of copper sulphate. It commences two or three hours after the injection and lasts for two or three days; but it is quite painless except during the first few minutes. Subconjunctival haemorrhages are the rule, especially in the case of long-standing trachoma. The authors claim the following advantages for the treatment:—(1) It is painless; (2)

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[3] MOTAIS.—*Ann. d'Oculistique.* 1925. Sept. Vol. 162. No. 9. pp.

[4] PFUNDER (Malcolm C.). Primary Tularemia of the Eye.—*Jl. Amer. Med. Assoc.* 1925. Oct. 3. Vol. 85. No. 14. p. 1061. With 2 text figs. [2 refs.]

[5] COLLIN (L.) & SCHWEISGUTH. De l'enfumage iodé dans le traitement du trachome.—*Revue du Trachome.* 1925. Oct. Vol. 2. No. 4. pp. 134–141.

the discharge ceases rapidly ; (3) it is very effective in the early stages of the disease ; (4) it is most beneficial in cases complicated by pannus and corneal ulceration.

Birks[6] states that the technique described in Nesfield's 'Ophthalmic Surgery' has afforded him much satisfaction in the treatment of trachoma. The fornix is ballooned by the injection of phenolaine solution and the membrane is well scraped by a scalpel. After stopping the bleeding, pure carbolic acid is applied with a probe to the bases of the 'granules' ; this is immediately sponged off in order to prevent it spreading, and castor oil is instilled. Birks uses a solution of 1 per cent. novocaine, 1 per cent. carbolic acid, and 4 per cent. sodium citrate with adrenalin instead of phenolaine. Subconjunctival injection of copper sulphate in solution was employed by Cuenod in the treatment of trachoma as long ago as 1903, and Urrets Zavalia [7] now recommends its use in a slightly modified manner. Two solutions are used : (*a*) Copper sulphate 1 per cent. with novocaine 4 per cent. ; (*b*) novocaine 4 per cent. with adrenalin. The following is the general scheme of treatment which may be altered slightly according to the circumstances of individual cases : The first injection consists of 0·25 cc. of solution (*a*) combined with 0·75 cc. of solution (*b*) ; the second of 0·5 cc. of each ; and the third of 0·75 cc. of (*a*) with 0·25 cc. of (*b*) ; three further injections are given of (*a*) alone—1 cc. The patient must be warned to expect pain and swelling, as these may be severe. The pain comes on about twenty minutes after the injection and lasts from three to six hours. It may be relieved by aspirin and fomentations. The swelling varies considerably in different cases and usually persists for eight or ten days, though it may disappear in three days or continue for a fortnight. The next injection is made when it subsides. An eye-lotion of 8 or 10 per cent. copper sulphate with glycerin, to which novocaine may be added, is used after the termination of the course. The method is unsuitable for acute trachoma and for cases associated with firm and extensive scarring ; but it has been found very effective in the early stages of the disease.

J. Sédan[8] in a paper discussing the remedies for trachoma employed by the doctors of ancient Rome, described a small slate tablet which was found at Villereal in 1848. The inscription on the tablet shows that the value of zinc and copper salts in the treatment of conjunctival disease was well known to them.

Motais[9] states that about 20 per cent. of the population of Saigon-Cholon are affected by trachoma. He found that the disease was just as prevalent among the five and six year old children, beginning school life, as among the older scholars of twenty. Naturally, the cicatricial form of the disease was more common in the latter and was very rarely seen in patients under ten. He recognizes a condition of 'pretrachoma' in which the angles of the fornix are lightly affected. This is easily cured by the usual caustic drugs ; and quite often a suitable correction of the refraction with the consequent rest to the eyes is sufficient to remedy it. Even well-marked trachoma is, he thinks, capable of undergoing a spontaneous cure without any damage to sight. The fact that, though such a large proportion of the population is infected, defective vision, due to trachoma complications, is seldom seen in the ordinary street crowds, suggests that the disease may undergo a spontaneous cure. His experience is that trachoma usually runs its course slowly without doing any great harm, provided it remains free from attacks of conjunctivitis (due to secondary infections); and that it is the carrier of the Koch-Weeks bacillus and other such pathogenic organisms who suffers from the grave, destructive forms of the disease. Brossage and copper sulphate have been found to be the most generally useful forms of treatment. Subconjunctival injections of cyanide were found beneficial when corneal complications were present. He abandoned the operation of peritomy, since, after giving it a fair trial, he decided it was of no value.

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[6] Birks (W. H.). Treatment of Trachoma. [Correspondence.]—*China Med. Jl.* 1925. Sept. Vol. 39. No. 9 p 851.

[7] Urrets Zavalia (Alberto). Las inyecciones subconjuntivales de sulfato de cobre en el tratamiento del tracoma.—*Semana Méd.* 1925. Sept. 17. Vol. 32. No. 38. (1653.) pp. 708–718. [14 refs]

[8] Sédan (Jean). Les sels de cuivre dans la thérapeutique des oculistes romains.—*Revue du Trachome.* 1925. Oct. Vol. 2. No. 4. pp. 142–145. With 1 text fig. [2 refs.]

[9] Motais (François). Trois années d'ophtalmologie en Cochinchine.—*Ann. d'Oculistique.* 1925. Oct. Vol. 162. No. 10. pp. 763–786 [1 ref.]

J. A. STUCKY[10] regards loss of elasticity of the conjunctiva as an important diagnostic sign in trachoma. In simple folliculosis "the conjunctiva is easily and evenly put on the stretch, the whole membrane being elastic, and the blood vessels visibly outlined. This is not the case in true trachoma." He uses grattage in the local treatment of the disease, and attaches great importance to constitutional treatment, special attention being paid to a properly balanced diet. He speaks very favourably of protein therapy.

S. LEWIS ZIEGLER[11], in a paper upon the surgery of trachoma, stresses the importance of blepharophimosis and of lachrymal obstruction as factors in preventing the cure of the disease. Blepharophimosis causes harmful pressure on the cornea and thus leads to pannus and ulceration. Canthotomy, or division of the upper limb of the external tarsal ligament, is recommended. Excess of moisture, associated with obstruction of the lachrymal passages, renders the conjunctiva water-soaked, and may thus help to maintain the swollen and unhealthy condition of the membrane. The author summarizes his paper as follows:—

1. The complications of trachoma are persistently maintained by two mechanical processes: (i) lid friction, from blepharophimosis and trichiasis, and (ii) lachrymal maceration, from perversion of the tears and obstruction of the duct by trachomatous invasion.

2. The practical problems involved are (i) to preserve normal tissue by conservative surgery, or, if this fails, (ii) to resort to radical surgery.

3. The conservative surgery of trachoma calls for (*a*) canthotomy and (*b*) rapid dilation of the duct, combined with (*c*) galvanocautery puncture, (*d*) Knapp's roller operation and (*e*) freezing by carbon dioxide snow; while (*f*) galvanocautery peritomy may be used to relieve pannus.

4. The radical surgery of trachoma requires in addition (*g*) Burow's splitting of the cartilage, or (*h*) Kuhnt-Heisrath's tarsal excision.

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[10] STUCKY (J. A.). Trachoma: Suggestions as to Diagnosis, Etiology and Treatment.—*Southern Med. Jl.* 1926. Feb. Vol. 19. No. 2. pp. 140–142.

[11] ZIEGLER (S. Lewis). The Surgery of Trachoma. Practical Problems.—*Jl. Amer. Med. Assoc.* 1926. Feb. 6. Vol. 86. No. 6. pp. 399–404. With 15 text figs. [13 refs.]

F. OLDT[12] says that "before passing judgment on the reports of results of any form of treatment for trachoma, the accuracy of diagnosis should be carefully considered. Especially is this true in China, where reports are heard of the exceedingly great prevalence of the disease. The question arises whether these reports are not exaggerated and whether cases of granular conjunctivitis [? folliculosis] are not included". One of the important signs characteristic of trachoma is that the conjunctival vessels are rendered invisible by the granulations, whereas, in the more superficial and less destructive forms of chronic conjunctivitis, they can be traced throughout their whole course. It is suggested that all cases should be treated as simple conjunctivitis for abour four weeks, and, with the exception of acute inflammations and vernal catarrh, they should then be operated upon if still granulomatous.

L. WEBSTER FOX[13] laments the irresponsibility of the North American Indians, and their carelessness as regards trachoma, which disease is very prevalent amongst them. The Indians will not tolerate any protracted treatment, and Fox has found grattage to be the most satisfactory operation. Tarsal resection is performed in the cicatricial stages.

C. F. HEAL[14], when in Bagdad, treated many trachomatous Arabs, and states that he found a modification of Heisrath's excision most satisfactory in the treatment of cicatricial trachoma with trichiasis. After excising the tarsus, he attaches the fringe of transitional conjunctiva to the lid by three mattress sutures. These are made to enter and to emerge through the skin about 2–3 mm. from the lid margin, so that, when tied, they tend to evert the edge of the lid and thus to correct the entropion and trichiasis.

The *Revue de Trachome* for January 1926 contains a report of the meeting of the Anti-trachoma League on January 16th 1926. V. MORAX[15] showed some cases of a papillary form of chronic conjunctival inflammation in which the aetiology was obscure. Trachoma, tubercle, and syphilis were excluded as causes. He remarked how easily similar conditions might be confused with trachoma. AUBARET[16] stated that analogous cases were met with in districts where trachoma was rife, and he suggested that many distinct diseases may be included in the term "trachoma" C. ABADIE[17] reported a case of ophthalmia neonatorum which he had successfully treated by Blaizot's serum, and he thought this serum might prove useful as a prophylactic against epidemics of ophthalmia. V. MORAX[18] discussed the rôle of acute conjunctivitis in the aetiology of trachoma. He concluded that trachoma might develop quite independently of any previous attack of acute conjunctival inflammation; but that such attacks served to draw attention to the existence of the chronic disease. A. Gauthier[19] in 1922 observed an epidemic of mild conjunctivitis amongst the children of Greek refugees from Turkey. They were noticed to be remarkably free from trachoma at the time. Some months later, however, he had occasion to examine them again, and then found a considerable proportion affected by trachoma. He formed the opinion that the insanitary condition of the camps, in which there was overcrowding and an abundance of flies, reacted on a lowered conjunctival resistance, caused by the previous epidemic, and thus favoured the spread of trachoma. To insist upon the contagious nature of trachoma might appear to many like flogging a dead horse. To convince the sceptical, however, J. Sédan[20] reported a case in which a healthy husband was infected by his trachomatous bride. It may be remarked that the patient had suffered from an attack of diplobacillary conjunctivitis a few months before he contracted trachoma.

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[12] OLDT (F) Differential Diagnosis of Trachoma —*China Med Jl* 1926. Jan Vol 40 No 1 pp 68–69

[13] FOX (L. Webster) The Trachoma Problem among the North American Indians —*Jl Amer Med Assoc* 1926 Feb 6 Vol 86 No. 6. pp. 404–406 [1 ref]

[14] HEAL (G. Freeman) Excision of the Superior Tarsus and Conjunctiva in the Treatment of Trachoma —*Brit. Jl Ophth.* 1926 Apr. Vol 10. No. 4 pp 185–191. With 4 text figs

[15] MORAX (V). Sur un type de conjonctivite papillaire chronique —*Revue du Trachome.* 1926 Jan Vol 3 No 1. pp 1–5.

[16] AUBARET Discussion of Morax —*Ibid* p 5

[17] ABADIE (Ch.). Quelques suggestions concernant la prophylaxie et le traitement des conjonctivites gonococciques et du trachome —*Revue du Trachome.* 1926 Jan Vol. 3 No 1 pp. 8-12 [1 ref]

[18] MORAX (V.). Le role des affections conjonctivales aigues dans l'étiologie du trachome —*Revue du Trachome* 1926 Jan Vol 3. No. 1. pp. 12–16.

Cornea.—S. K. Mukerjee[21] records two cases of that most distressing complaint, *Herpes ophthalmicus*, in male patients, aged respectively 76 and 66. The elder of the two had suffered from influenza two months previous to the onset of the disease. The eye was lost through corneal ulceration; and a persistent neuralgia proved very troublesome. The younger had suffered from severe herpes of the right side a fortnight before the supra-orbital eruption appeared. Superficial infiltration of the cornea occurred with slight iritis and keratic precipitates. The cornea cleared completely, but here, too, anaesthesia in the affected area with neuralgia remained. The nasal nerve was affected in both cases. In the experience of the reviewer phosphide of zinc occasionally seemed of some use in this disease. One-tenth of a grain may be given in a pill every hour for five hours, and every three hours subsequently. C. A. Young[22] has reported 25 cases of various types of corneal ulceration which he treated with the Shahan electrothermophore. He considers that the thermophore is almost a specific in the treatment of so-called infected corneal ulcers. The instrument is applied for one minute at a temperature between 158° and 160° F. When used at lower temperatures (120° to 140° F.) it is stated to hasten regression and stimulate absorption.

Ocular Muscles.—*Squint.* Henry Smith[23] pleads for the treatment of concomitant squint by faradization of the faulty muscle rather than by operation. He points out that shortening soon takes place in a relaxed muscle, and that such contraction occurs more quickly if the muscle is submitted to electrical stimulation. After cocainization of the conjunctiva, the faulty rectus is subjected to a weak faradic current for five minutes, and this treatment is repeated twice daily. Smith points out that this measure involves no harmful disturbance of the axes of the globe.

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[19] Gauthier (A.): Discussion of Morax.—*Ibid.* pp. 17–19.

[20] Sédan (Jean). Contamination trachomateuse chez l'adulte à l'occasion d'une conjonctivite à diplobacilles de Morax.—*Revue du Trachome.* 1926. Jan. Vol. 3. No. 1. pp. 20–24.

[21] Mukherjee (S. K.). Two Cases of Herpes Zoster Ophthalmicus.—*Calcutta Med. Jl.* 1925. Oct. Vol. 20. No. 4. pp. 153–154.

[22] Young (Charles A.). Electrothermophore in Treatment of Corneal Ulcers.—*Amer. Jl. Ophth.* 1925. Apr. Vol. 8. Ser. 3. No. 4. pp. 293–300. [15 refs.]

[23] Smith (Henry). A Plea for Research in the Treatment of Squint.—*Indian Med. Gaz.* 1925. Dec. Vol. 60. No. 12. p. 559.

LENS.—*Cataract.* M. TEWFIK[24] has recorded his favourable impression of the induction of orbicular paresis in the operation of cataract extraction. He encircles the orbit with deep injections of a half per cent. solution of cocaine hydrochloride. The injections are placed half to one inch away from the bony margin of the cavity; and the total amount of the fluid injected varies from 2 to 4 cc. Using this weak solution of cocaine he has hitherto had no trouble from poisoning.

RETINA.—A case of *Retinitis Pigmentosa* affecting only one eye has been reported from the Dutch East Indies by C. BAKKER[25]. So far, according to the author, only six well-authenticated cases of monocular retinitis pigmentosa have been recorded. He adds another which occurred in a Eurasian woman 56 years of age, whose left eye had been defective for two years without an apparent cause, and showed the typical characteristics of retinitis pigmentosa.

Glaucoma. Even to-day one may encounter the erroneous impression that glaucoma does not attack myopic eyes. A paper by KNAPP[26] may serve a useful purpose in helping to correct this, as he analyses 32 cases of the disease he has seen in myopic eyes. He considers that " glaucoma in myopic eyes is of the simplex type, with deep anterior chamber, low increased tension, characteristically shallow cup, and the usual glaucomatous field defects." The operative results are good.

GENERAL SYSTEMIC DISEASES.—*Malaria.* R. E. MCCONNELL and C. M. MCGILL[27] describe a case of *herpetic ulcer of the cornea* associated with malaria. This is, of course, one of the most common ocular complications of malaria; but the authors consider that it must be relatively rare in the Colombian State of South America since they had not met with it previously.

M. RIAD[28] has recorded a case of *amblyopia from quinine poisoning.* The patient, a man of good physique aged 30, was given a large dose of quinine in mistake for Epsom salts. Vomiting was followed by an attack of coma which lasted for eight hours. On coming round the patient found that he was blind and deaf. The deafness gradually passed off; and, when seen some two months after the accident, the central vision was 6–60 in one eye and 6–24 in the other. The upper, lower, and nasal fields were greatly contracted. Both discs were pale with slightly hazy edges, and the macula was a brownish red colour. The retinal vessels were much contracted with white lines visible along the arterial walls, whilst two white plaques were present on the superior nasal artery of the right eye at a short distance from the papilla. Central vision improved greatly for about two months under treatment with nitrite of amyl, strychnine, etc.; but, as so often happens in these cases, a marked deterioration set in subsequently. Another case of *quinine amaurosis* has been published by F. C. PLUMMER[29], in which, about three or four weeks previous to the examination, the patient when going to bed took thirty grains of quinine sulphate in tablet form. He woke up blind and deaf on the following morning. Five days later the hearing improved and perception of light returned. When seen, the vision in each eye was 6–36; the pupils were rather dilated and sluggish in reaction. There was a central scotoma for green and red, and the visual fields were contracted to the 10° line. The optic discs were intensely white, and the retinal arteries markedly contracted. A week later the R.V. was 6–12 and L.V. 6–9, while the scotoma had disappeared but the visual fields were unchanged. When seen a year later the condition was the same. Remarkable features are (1) the dose was comparatively small, and (2) the patient had been accustomed to take prophylactic doses of 5 grains of the drug for many years without injury.

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[24] TEWFIK (M.). Akinesis in Cataract Extraction.—*Bull. Ophth. Soc. Egypt.* 1925. pp. 25–28. [5 refs.]

[25] BAKKER (C.). Een geval eenzijdige Retinitis pigmentosa.—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No 5. pp. 593–594.

[26] KNAPP (Arnold). Glaucoma in Myopic Eyes.—*Arch. of Ophth.* 1926. Jan. Vol. 55. No. 1. pp. 35–37

[27] MCCONNELL (R. E.) & MCGILL (C. M.) A Note on Corneal Ulcer in Malaria. —*Jl. Trop. Med. & Hyg.* 1926. Jan. 1. Vol. 29. No. 1. pp. 3–4.

[28] RIAD (M.). Description of a Case of Quinine Amblyopia.—*Bull. Ophth. Soc. Egypt.* 1925. pp. 53–55.

Tuberculosis. T. M. LI[30] met with a case of extensive tuberculosis in the eye of an infant aged ten months. The baby had suffered from cough and dyspnoea for two months, and the parents had noticed an inflammation of the right eye for one month. All the ocular tunics were involved and the eye was disorganized. Typical giant-cell systems containing acid-fast bacilli were found on microscopical examination. The infant died a few days after the eye had been removed. The mother suffered from advanced tuberculosis. LI considers the case to be remarkable (1) on account of the youth of the patient, and (2) because such an extensive involvement of the ocular tissues occurred within so short a period. He thinks it is probable that many cases of ocular tuberculosis in moribund tubercular patients escape observation.

T. P. LEE[31] reports that he found miliary tubercles in the choroid of a Russian male, age 45, upon whose body he was making an autopsy. The cause of death was carcinoma of the lungs associated with general miliary tuberculosis, and the discovery of the ocular lesion was quite unexpected. Five tubercles, the largest being about 0·75 mm. in diameter, were found to be situated round about the macular region in each eye. The tubercles appeared to originate as small lymphocytic infiltrations around the veins of the middle-sized vessel layer of the tunic. No giant-cells were observed, but acid-fast bacilli were present in abundance. In no case had the tubercles penetrated the membrane of Bruch. No fundus abnormality had been detected in the course of an ophthalmoscopic examination made a week before the patient died.

Kala-Azar. W. P. LING[32] observed retinal haemorrhages in two out of the five kala azar patients whose fundi he examined. He considers that the haemorrhages may be attributed to the intense secondary anaemia which these two patients showed. From his observations he thinks that absorption of the blood is likely to occur in from four to five months, once the general disease has been efficiently treated.

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[29] PLUMMER (F. C.). Quinine Amaurosis. [Memoranda.]—*Brit. Med. Jl.* 1925. Dec. 5. p. 1062.

[30] LI (T. M.). Extensive Tuberculosis of an Eye in an Infant.—*China Med. Jl.* 1925. Nov. Vol. 39. No. 11. p. 1002–1011. With 4 figs. [12 refs.]

[31] LEE (T. P.). The Finding of Miliary Tubercles in the Choroid of Autopsy Specimens.—*China Med. Jl.* 1925. June. Vol. 39. No. 6. pp. 501–503.

[32] LING (W. P.). Further Observations on the Fundus Oculi of Kala-Azar Patients.—*China Med. Jl.* 1925. Aug. Vol. 39. No. 8. pp. 681–683. [2 refs.]

N. BHADURI[33] has observed the same complication in kala azar, and noted its direct association with the anaemia connected with the disease. Rapid absorption of the blood occurred in his cases when the constitutional condition improved.

Diabetes.—W. R. PARKER[34] has drawn attention to the great variety of ocular manifestations presented by diabetics. He instances the following conditions :—Glycosuric amblyopia with a central colour scotoma, changes in refraction, occasional paralysis of accommodation, paralysis of ocular muscles, xanthelasma, iritis (to which eyes of a diabetic subjected to an intraocular operations are specially liable), cataract, retinitis, neuritis, and lipaemic retinitis. He mentions a case of glaucoma in which both eyes were affected; this failed to respond to iridectomy or to sclero-corneal trephining, but, a great excess of blood sugar having been found, eventually yielded to injections of insulin.

PARASITIC DISEASE.—*Ocular Myiasis.* W. B. HERMS[35] identified two specimens, sent to him by FAUS from Honolulu, as larvae of *Cephalomyia* (*Oestrus*) *ovis*—the common head-maggot fly of sheep. Each specimen was about one millimetre in length. The larvae had been removed from the eye of a labourer in a chemical concern. Two days before he was seen, some dust from a keg of chemical compound was blown accidentally into the left eye of the patient, and conjunctival irritation followed immediately. The larvae were buried in the sclera. They were extremely adherent to the conjunctiva, and caused an acute inflammation of the membrane with ulceration. HERMS states that the adult female fly is slightly more than half the size of a honey bee. It is yellowish brown in colour and deposits living young. Deposition of the young is accomplished while on the wing by striking the nostril of the victim, or by dashing into the eye. The larvae are very spiny and quite active. They possess a pair of relatively large hooklets at the anterior end of the body. Migration occurs into the nasal sinuses.

MISCELLANEOUS.—M. TEWFIK[36] has used potassium sulphate to enhance the anaesthetic action of cocaine, and he has found that a 1 per cent. solution of cocaine induces a satisfactory surface anaesthesia if ½ per cent. of potassium sulphate is added. The actual percentages of the drugs used were: Cocaine hydrochlor. 1 per cent.; adrenalin chlor. 1–1,000, 5 per cent.; 2 per cent. solution of potassium sulphate 25 per cent.; carbolic acid solution 69 per cent. He refers to similar favourable reports of the preparation by other surgeons.

The Annual Medical and Sanitary Report for the Uganda Protectorate for the year 1924 includes a report on the Eye Clinic at Mulago by Dr. H. B. OWEN[87]. At present this clinic is only a small one with 619 new cases and 2,053 total attendances. OWEN states that trachoma is far the most common disease; and it accounted for over one-third of the admissions. This is interesting as some writers have stated that trachoma seldom attacks negroes. Interstitial keratitis is rarely seen; and yet general syphilis is quite common amongst the population. Senile cataract seems to be rare, only five cases being noted (0·8 per cent. of the new admissions). OWEN suggests that this apparent rarity may be due to the fact that a lack of transport facilities prevents senile patients coming to hospital. [One notes that for the whole Protectorate, out of a total of 257,677 patients treated for all causes, only 38 suffered from cataract. Of the same total only one is returned as suffering from vesical calculus. Henry SMITH has remarked that the converse obtains in the Punjab, viz., those districts which show the highest incidence of senile cataract show a correspondingly high rate of stone.] Optic atrophy is stated to be rare, only one case of primary atrophy and two of secondary atrophy being seen. OWEN believes parasyphilitic conditions to be almost unknown in the country. The majority of operations were on account of entropion—the result of trachoma.*

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[33] BHADURI (B. N.). Retinal Haemorrhage in Kala-Azar.—*Calcutta Med. Jl.* 1925. Nov. Vol. 20. No. 5. pp. 187–192. [4 refs.]

[34] PARKER (Walter R.). Ocular Manifestations of Diabetes.—*Amer. Jl. Ophth.* 1925. Apr. Vol. 8. Ser. 3. No. 4. pp. 284–287. [3 refs.]

[35] HERMS (W. B.). Ophthalmomyiasis in Man due to *Cephalomyia* (*Oestrus*) *ovis* (Linn.).—*Jl. Parasit.* 1925. Sept. Vol. 12. No. 1. pp. 54–56. With 1 text fig. [4 refs.]

[36] TEWFIK (Mohammed). Some Clinical Experience with Cocaine and Potassium Sulphate Solution and with Butyn.—*Bull. Ophth. Soc. Egypt.* 1925. pp. 44–47. [4 refs.]

H. Kirkpatrick.

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[87] OWEN (H B). Report on the Eye Clinic for 1924 *Uganda Ann Med. & San. Rep for Year ended 31st Dec 1924* pp 66–67

* The summary of Dr OWEN's report was sent to Dr. HOWARD COOK, since it was thought that from his large experience he could make useful comment on the questions raised Dr COOK states that he found trachoma very prevalent in the Mengo district, but that other forms of conjunctivitis, with their consequent corneal complications, were also common there He, too, has noticed the comparative rarity of cataract, and remarks that there may be some connexion between this and the correspondingly low incidence of glaucoma which exists He met with several cases of optic atrophy, but considers that locomotor ataxy is extremely rare in Uganda

MISCELLANEOUS.

BALFOUR (Andrew). **Some British and American Pioneers in Tropical Medicine and Hygiene.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Oct. 15. Vol. 19. No. 4. pp. 189–229. With 54 portraits on 6 plates. [9 refs.]

At a time when people seem more bent on claiming rewards for themselves than on thinking of what they owe to their predecessors, it is refreshing to find an author who, looking with some reverence into the Past, assists us to the salutary remembrance that there were good men anterior to Agamemnon, and thence to the chastening reflection that it is sometimes more profitable to remember our deficiencies than to glorify our achievements.

In the present paper we learn that there were great men before Napoleon who understood that an insanitary environment is more disastrous to the fighting-man than the bloodiest engagement; such were John PRINGLE (1707–1783), James LIND (1716–1794), Gilbert BLANE (1749–1834), and Thomas TROTTER (1760–1832)—the first a great benefactor to the Army, and the others equal benefactors to the Navy; and that there were good men who produced good books on the diseases of the tropics before the encyclopaedists of the present day. The four above-named, along with George BALLINGALL (1780–1825) and George PLAYFAIR, both of the I.M.S., the former distinguished for discriminating between two forms of dysentery, and the latter for advocating ipecacuanha in the treatment of that disease, are but six of the 29 pioneers—most of them shown in his habit as he lived—who are here brought to revisit us from the registers of the 18th century.

The author also calls up—and also, in most cases, with their portraits —42 pioneers who led the way, through gradually improving conditions, during the 19th century; the name and fame of most of these are still fresh in memory and some of them—JENNER, PARKES, FLORENCE NIGHTINGALE, LIVINGSTONE, SNOW, MANSON, GORGAS—are as familiar as household words. He does not profess completeness, but there are two outstanding names that one misses from his record, namely, F. J. MOUAT (1816–1897) and H. J. CARTER (*ob.* 1895), both of the I.M.S.; The former in 1853 carefully tested chaulmoogra in the treatment of leprosy and strictly recommended it to the notice of the profession; the latter in and about 1856 published a series of remarkable researches on Protozoa—particularly on their sexual phenomena—which were far in advance of the knowledge then current.

A paper like this does something more than impart instruction. It admonishes us of one of the serious deficiencies of the ordinary medical curriculum, namely, neglect of the History of Medicine. Without a good knowledge of this history of hard work and self-sacrifice under difficulties how shall the old spirit remain alive and the ancient traditions of our profession be handed on unbroken?

A. Alcock.

Oppenheim (F.) **Review of One Hundred Autopsies of Shanghai Chinese.**- *China Med Jl.* 1925 Nov & Dec. Vol. 39. Nos. 11 & 12 pp 1011–1026; 1067–1076.

This is a more important paper than appears from the title. Its significance is due to the facts that autopsies are rarely performed in China, and that the records are here presented in full detail. The author has excluded autopsies on foreigners, those performed after 36 hours (medico-legal), deaths due to accident, violence or poison, and new-born children and some syphilitics. The age in decennia and the sex are shown in a table, where one notes that 9 were under one year; 76 were males and 24 females.

Passing over congenital defects and malformations and tumours we come to *infectious diseases.* Evidence of *typhoid fever* was found in 4 cases, and of general septicaemia in 12; in most cases streptococci or staphylococci were cultivated from blood, spleen or bone marrow. *Tuberculous* changes were found in 66 and in 65 the lungs were affected; in 16 cases tuberculosis was the cause of death. The acute miliary form was never found. Of the bodies without evidence of tuberculosis 18 exhibited pleural adhesions, and the author puts the index of primary tuberculosis at 90 per cent. In most cases the disease stops here; in 38 per cent. a secondary or tertiary tuberculosis had developed. The findings of tuberculosis in other parts of the body are detailed. Evidence of constitutional *syphilis* of adults was found 17 times, and of congenital syphilis 5 times. The aorta was affected in 16 cases, and in 8 the left ventricle was hypertrophied.

Clonorchis sinensis was found 7 times; the worms inhabited the bile-ducts, never the gall-bladder. Some specimens contained much pigment; some none. Evidence of *schistosomiasis japonica* was found 11 times. In five it was the principal disease, and in 4 others a serious malady. The intestinal canal was 8 times affected—the lower ileum and large intestine. The liver was affected in 11, and was either large, normal or small according to age; the average age of the group with reduced livers was 39. In one hobnail liver the condition could not be distinguished from ordinary atrophic cirrhosis. Eggs of *S. japonicum* were present, often in enormous quantities. Splenic enlargement occurred in 6 out of the 11. In two cases examination of the lungs revealed large numbers of eggs. *Ascaris lumbricoides* was found in 40 cases; among the medico-legal autopsies 55 per cent. were infested. Hookworms were encountered 14 times, among the forensic cases in 24 per cent. *A. duodenale* was more common than *N. Americanus. Trichocephalus dispar* was found 25 times and *O. vermicularis* twice. Cestodes were not met with.

Though 32 of the deceased persons were over 40 and 12 more than 50, *atherosclerosis* was rare, which is in keeping with the fact that the blood pressure of the Chinese is lower than that of Europeans; atherosclerosis was pronounced in one case only.

The *spleen* was generally enlarged. A table gives grouped weights in 84 Chinese adults. If 200 gm. be taken as the maximum weight of a normal Chinese spleen (the author would put it at not more than 150 gm.), 50 per cent. showed pathological enlargement. The enlargement is often due to hepatitis and hepatic cirrhosis, which was found in 19 cases; other cases were attributable to typhoid, septicaemia, dysentery, pneumonia, malaria and chronic septic conditions. In two instances splenic rupture had occurred. Inflammatory disease of the ***intestinal canal*** was very frequent, seen in 51 cases. Changes due to "ulcerative caecitis and colitis (dysentery)" were found 7 times; in 3 the lowest part of the ileum was also affected. Typhoid ulcers numbered 4, tuberculous ulcers 17, inflammation due to schistosomiasis 8, to ancylostomes 4. Nine of the unaffected had scars in large intestine or ileum. Inflammatory diseases of the *liver* were also frequently found. Fully developed cirrhosis was found in 14, 5 due to schistosomiasis; and interstitial hepatitis 21 times, due in 5 instances to Schistosoma eggs. Four cases of gummata, 12 of tuberculosis, and 2 of typhoid pseudo-tubercles made a total of 53 persons with inflammatory changes in this viscus. Ulcers of the *stomach* were found in 11 cases, a high incidence attributed to the frequent occurrence of intestinal and hepatic disorders. The summary is of general interest:—

> ' As pointed out at the beginning of this article a hundred autopsies are not sufficient to allow of sweeping conclusions Very many diseases occurring in Shanghai were of course not represented in the series. On the other hand, if the findings actually secured and proved by anatomical evidence are considered as a whole, and compared with European autopsy material, the impression is given that the diseases of China are more primitive in character than those of the West Infectious diseases are much more prevalent, and among them the most primitive group, that caused by animal parasites especially helminths, plays an important rôle Chronic septic conditions are very common and seem often to originate from the intestinal canal Hertwig once said that the intestinal canal is properly speaking, not a part of the system but a part of the external world incorporated into it The correctness of this view is strikingly demonstrated by a comparison of the pathology of the intestine in Chinese with the pathology of peoples of the West Splenic enlargement is very common Tuberculosis is just as prevalent in China, or even more so than in the West, but seems to show less tendency to heal once the secondary stage is reached Syphilis is very widespread In Germany the writer used to see fewer cases of grave gummatous visceral syphilis in a thousand autopsies than in China amongst a hundred a fact probably due to the lack of proper treatment in Shanghai as well as to the higher infective index In other respects also the diseases of China can be regarded as of a more primitive nature than in the West It appears that the organs connected with the beginning of metabolism in the intestine, liver, and stomach are more often affected, and those at the end of metabolism blood vessels, kidneys and nervous system—less often affected than in the West On the other hand, natural selection with survival of the fittest has freer sway than in the Occident, and there are fewer factors causing contre-selection There is still a great field for the study of comparative ethnical pathology, but for this purpose many more autopsies will be necessary and at present these are very difficult to obtain When circumstances are more favourable a great many problems will probably be solved which now are only in the process of formation "

A G. B.

FISCHER (Walther). Der Einfluss der Rasse in der Pathologie. [**The Influence of Race in Pathology.**]—*Beihefte z. Arch f Schiffs- u Trop.-Hyg.* 1925. Vol. 29. No. 1 pp 88–99 [9 refs.] Also 1926. Vol. 30. No. 1. pp. 204–205.

The author limits himself to the yellow race, of which he has experience, and he considers that the study of racial differences in incidence and behaviour of disease is calculated to throw more light on aetiology in certain cases than other studies. After some remarks on the lack of information about pelvic measurements in Chinese and Japanese, about Mongolian spots in crosses between the white and yellow races, and psychoses of the Chinese, he comes to the blood. The leucocyte formula in the Chinese differs from the European formula in that the number of lymphocytes is greater; is this due to the vegetarian diet? A study of blood groups separates the north from the south Chinese, the former being grouped with the Koreans, Manchurians and Hindus, the latter with the Japanese and Hungarians (OTTENBERG); more observations are required.

Most observers are agreed that appendicitis is rare in the Chinese, but this may be attributed to such cases not coming within the ken of the European doctor; PFISTER at Peking has recently recorded 136 appendicitis operations among 3,000 admissions for all diseases; however, one-fifth of these admissions were not of Chinese race. The author thinks that appendicitis is really scarce, and suggests that the matter might be settled by a search for partly obliterated appendices, which indicate past appendicitis. The possible causes of the low incidence—if it be such—are discussed. Ulcer of the stomach and duodenum are rare in the Chinese. Is this the result of diet? Do Europeanized Chinese get these affections? From his own observations the author believes that the values for free HCl and for total acidity of the stomach are very low. This possible factor should be the subject of study, which should include a histological examination of the stomach. Similarly stomach cancer is rarer in the Chinese than in Europe. Of oesophageal cancer he has recently written [see this *Bulletin*, Vol. 22, p. 628].

Why is sprue so common in the East in Europeans, so rare in natives? Is this racial or are there other causes? Why are typhoid and paratyphoid common in Europeans living in good sanitary conditions in China and rare in Chinese? Do the children gradually become immunized? What is the real incidence of these diseases among the Chinese? Then syphilis. Severe manifestations in skin and mucous membrane are common in the Chinese and grave gummatous ulceration of the skull such as is familiar in old museum specimens in Europe. Tabes and G.P. are believed to be rare in China. The author, in crowded Shanghai, did not see a man with tabetic gait in six years. But now PFISTER, a pupil of ERBS, reports from Peking that tabes and G.P. are as common as in Europe, and especially in soldiers. Is this the result of European treatment? We know practically nothing about arterial atheroma, blood-pressure, contracted kidney, in China, or about malformations. In his discussion of cancer which follows, there is nothing new.

The conclusion is that when we meet with racial differences we must consider their origin carefully before we attribute them to inner constitution.

A. G. B.

GIBSON (R. M.). **The Incidence of Appendicitis in Chinese.**—*China Med. Jl.* 1926. Jan. Vol. 40. No. 1. pp. 43–51.

The data were obtained from the examination of bodies at the Victoria Public Mortuary and from the records of cases treated in hospitals at Hong Kong. Of 815 bodies examined 81 showed evidence of recent or old inflammation of the appendix and 8 had a tuberculous appendicitis. A table shows that in 60 there were adhesions and in 11 acute appendicitis [among the numerous headings obliteration of the appendix does not figure]. The incidence of appendicitis was 17·3 per cent. in persons above 5 years and 7·4 per cent. below that age.

The hospital records revealed 93 cases admitted between 1896 and 1924; of 73 persons who submitted to operation 46 recovered and 27 died; the classification of the lesions show that they were severe. Cases are cited in which over-indulgence in shrimps and crabs precipitated the attack. The conclusions are drawn that the milder types of appendicitis are common amongst the Chinese, but are not seen in hospital, and that of the relatively few suppurative or gangrenous cases most, in the larger cities, are brought to hospital.

Dr. MAXWELL expressed the opinion that Hong Kong statistics are not applicable to China proper. Conditions of life and diet differ greatly between inland China and Hong Kong. He gives some statistics and thinks that it is impossible to maintain that appendicitis is a common disease in China generally. [See also FISCHER & OPPENHEIM above.]

A. G. B.

KULZ (L.). Krankheitsbilder, die dem reinrassigen Naturmenschen fehlen, und die Nutzanwendung daraus fur den Kulturmenschen. **[Disease Pictures not found in Primitive Man of Pure Race and the Practical Application to Modern Man.]**—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 461–475.

The author lays stress on the purity of race of the primitive man of his title. As long as there is no admixture of races certain diseases common among civilized man are, he says, never seen. Such are diphtheria and sepsis (blood poisoning); in his experience of tropical Africa and the South Sea (period not stated) he has never seen a case of either of these; progressive and general sepsis does not occur, and he suggests that all such infections are either localized or warded off altogether. Appendicitis, rickets and diabetes are likewise absent. Nervous and mental diseases are rare, including general paralysis, the absence of which may be due to the antagonism of malaria. Benign tumours are common enough but sarcoma and carcinoma never occur in his primitive man. Here again he postulates a possible influence of malaria and notes that in the malaria-free Caroline Islands malignant disease is found, but he hastens to add that this island was colonized away back by another race, and the island folk are now not "pure". He compares groups of children in Cameroon and New Guinea with a similar group in Germany and notes that the tropical children, though free from rickets, short sight, narrow chests, scrofula and faulty "bite", are affected in high proportion with yaws, big spleen, hookworm and other gut parasites, leg sores and skin diseases. Finally he gives an interesting account of native customs which have or had a hygienic aspect, infanticide, totemism and the like.

A. G. B.

DURAND (P.). Notes sur le Sahara. De Tunis au Dahomey par le Tchad. [**Notes on the Sahara. From Tunis to Dahomey via Lake Chad.**]—*Arch. Inst. Pasteur de Tunis.* 1925. Dec. Vol. 14. No. 4. pp. 469–504. With 7 figs. & 1 map in text.

An account of an expedition of some 1,500 miles across the desert in caterpillar cars [autochenilles], which the author accompanied as doctor. Since the distance was covered between January 7th and February 23rd little medical information can be expected. The chief result was the discovery of bilharziasis at Djanet, an oasis about half way, just north of 20° N, where repairs necessitated a longer stay than elsewhere. A feature of the expedition was the low night temperatures, which contrasting with the daily heat were very trying; the lowest recorded was —10° C. To these alternations of temperature are attributed the indolent sores of the feet from which the bare-footed "méharistes" suffer. The members of the mission suffered from fissures under the nostrils, at the angles of the lips, and at the backs of the finger joints; these fissures were painful and opened at the slightest movement, and in spite of treatment persisted till the tropic was reached. On the other hand it was noted that all serious injuries heal well in the desert. At Fort Polignac a negress was poisoned by a single flower of a species of Hyoscyamus or henbane which grows freely in that neighbourhood; the author hopes to get a supply for pharmacological investigation.

Djanet is the most southerly oasis in Algerian territory and has a thousand inhabitants. Here the commonest affections were eye injuries and trachoma with its sequelae. Absence of tuberculosis is due to lack of intercourse with Europeans. Malaria is present and venereal diseases are common. Investigation of a case of haematuria in a European led to the discovery that seven of the eight there resident had vesical bilharziasis. All were accustomed to bathe in a pool dug for the purpose in an agreeable site shaded by palm trees. Numbers of Bullinus were here found, as well as in other pools scattered over the oasis. The disease is very common among the indigenous population, who confound it with gonorrhoea and hold it of small account.

At a village near Lake Chad the author notes "Pas de tuberculose, sauf chez un jeune enfant dont le teint pâle nous frappe. Il s'agit du fils d'un officier et d'une femme Kanembou, le pére lui a laissé comme seul héritage le bacille de Koch." At N'Guigmi on the Lake syphilis is very common, with severe skin and bone manifestations which yield readily to treatment. Tuberculosis in its pulmonary or osteo-articular forms is found rarely. The epidemic of relapsing fever which has spread over Nigeria reached N'Guigmi 2–3 years ago. Owing to the absence of laboratory equipment the spirochaetes were not demonstrated here till the author's visit. The mortality is given as 10–25 per cent. The mode of transmission is discussed and is regarded as unsettled. Specimens of ***Ornithodorus moubata*** were brought alive back to Tunis but refused to feed.

From Chad the Mission went down to the coast through Dahomey to return by sea, and the only further information of medical interest is that chiggers so swarm at Kotonou and the Dahomey coast generally that even though the bare foot is never put to the ground one is not protected from attack. Naturally there is much of general interest in Dr. Durand's paper which does not find a place here.

A. G. B.

AKASHI (M.). **Some Clinical Observations.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1925. Nov. No. 248. English summary p. 5. [In Japanese.]

Since 1923 the author at the Tainan hospital, Formosa, has had under his care 302 patients admitted for causes other than liver disease; 22·8 per cent. of these had enlarged liver and 20·8 per cent. enlarged spleen; about half the cases had both. This enlargement is attributed by the author to malaria and typhoid.

In the last five years there have been 75 admissions for acute liver inflammation, chiefly healthy subjects of both sexes between 20 and 40 years. Under injections of emetine 68 recovered and *E. histolytica* is recognized as the cause; in 7 pus formed.

A. G. B.

MENDELSON (Ralph W.). **Some Interesting Diseases observed in the Clinic of the Bangkok Central Hospital.**—*Jl. Trop. Med. & Hyg.* 1925. Nov. 16. Vol. 28. No. 22. pp. 393–405. With 49 text figs.

This paper consists of a short introduction and a gallery of good photographs of patients presenting themselves for treatment in the Clinic of the Central Hospital, Bangkok, with photomicrographs of microbes and tissues in some instances. They include several skin conditions, which lend themselves to this method of presentation, and some illustrations of native practices and superstitions.

A. G. B.

TERRA (Fernando). Organização hospitalar e radiumtherapica do Estado de S. Paulo. [**Hospital Organization and Radium Therapy in the State of S. Paulo.**]—*Brazil-Medico.* 1925. Nov. 7 & 14. Year 39. Vol. 2. Nos. 19 & 20. pp. 259–266; 283–289.

This article is little more than a list of the hospitals and dispensaries of the State of Sao Paulo, which is exceptionally well provided with such institutions. There appear to be over 30 large hospitals and maternity hospitals and more than 70 smaller establishments. Between thirty and forty are mentioned with more or less detail, the character of the buildings, the number and nature of patients treated, and the general arrangements for the reception, examination and treatment of them being briefly stated.

H. Harold Scott.

BHATIA (S. L.). **A Lecture on Blood Sugar and Sugar Tolerance.**—*Indian Med. Gaz.* 1925. Dec. Vol. 60. No. 12. pp. 565–570. [9 refs.]

The lecturer opens by pointing out in a striking manner the important part played in the body's economy by glucose metabolism, and that this is especially so in vegetarian races such as those in India. MACLEAN's method was used by the author for estimating the blood-sugar, and MACLEAN's data are derived from the study of Western nations. Here the "fasting level" varies from 0·07 to 0·12 (average 0·1) per cent. After the intake of carbohydrate meal it rises for about half-an-hour, and then declines to the fasting level about two hours later. The maximum reached is 0·17 per cent. The threshold value is 0·17 to 0·18, for beyond that, excess leads to glycosuria. These figures are different in vegetarian races. The fasting level of those the author examined averaged 0·149 per cent. (0·084 to 0·242). A dose of 50 gm. glucose (or in some cases cane-sugar was used) produced a rise in the usual time, followed, as before stated, by a fall to or near the pre-glucose level. The maximum reached was much over that in Europeans, but the figures vary somewhat. They are fully given in the paper. We need not follow the author into his various points, such as his views on HAMBURGER's theory of the "threshold value," or the part played by various endocrine organs, and the various factors of the equalization of entrance and exit of the sugar of the blood; suffice it to say in reference to the last-named that he thinks conversion into glycogen by liver and muscles is quantitatively the most important factor. His main contention is that the habitual use of large amounts of carbohydrate lead not only to a higher "fasting level," but to a lower "threshold level" (about 0·15 per cent.); and therefore more ready production of glycosuria. He suggests that this work shall be continued and amplified in several directions, and concludes with this moral to his countrymen: "Eat less sugar and starch and take more physical exercise."

W. D. Halliburton.

VAN THIEL (P. H.). Was ist *Rickettsia melophagi*? [**What is** *R. melophagi*?]—*Arch. f. Protistenk.* 1925. Vol. 52. No. 3. pp. 394–403. With 1 text fig. [18 refs.]

The author allows that the nature of Rickettsia bodies is still insufficiently known and, as regards *Rickettsia melophagi*, admits that there is a stage when the degeneration products of the nuclei of the Crithidia of the Melophagus have an extraordinary resemblance to Rickettsia bodies. But the distinctive characters of Rickettsia bodies are that they do not give the volutin reaction, are not dissolved in 5 per cent. solution of carbonate of soda, and are not destroyed by hydrolysis in hydrochloric acid.

A. A.

CASTELLANI (Aldo). **Phosphorus in the Treatment of Various Diseases.**—*Jl. Trop. Med. & Hyg.* 1925. Nov. 2. Vol. 28. No. 21. p. 377. [4 refs.]

The author gives Oleum phosphoratum of the British Pharmacopoeia for various diseases. It is supplied by Martindale & Co. in ampoules containing either 5 minims of the pure oil or ½ minim in 10 minims of almond oil. On its use in oriental sore he has already reported [see this *Bulletin*, Vol. 20, pp. 576 (where the dose was incorrectly given) and 874]. The best results are obtained in old intractable cases with extensive ulceration; the oil is applied externally and in nodular cases injected. The external application was followed by healing in a case of granuloma inguinale which had resisted tartar emetic; Donovan bodies were found; in a second case it failed. The author regards it as an adjuvant to quinine in chronic malaria; half to three minims are given subcutaneously twice a week. In two cases of osteomalacia the results of its use were encouraging. Care should be taken by the user and the late action on the liver should not be forgotten.

A. G. B.

D'AMATO (H. J.). Toxicidad del bismuto coloidal por vía endovenosa. [**Toxicity of Colloidal Bismuth given Intravenously.**]—*An. Inst. Modelo Clin. Méd.* Buenos Aires. 1924-25. Vol. 9. No. 1. pp. 140-156. [12 refs.]

The author has undertaken some important experiments on guineapigs, rabbits and dogs to test the toxicity of bismuth intravenously. He finds that colloidal bismuth can be given in far higher concentration than has been employed hitherto without harmful effects. Signs of toxic action were tremors and convulsions, congestion and haemorrhage in the kidney, liver and intestine. In guineapigs the toxic dose was a variable one, between 0·095 and 0·035 gm. per kilo body-weight; the higher concentrations, up to 4 per cent., never produced "shock" or embolism, and death, when it occurred, was associated always with signs of bismuth poisoning. The drug is cumulative when a fixed amount is given daily. Rabbits also have a varying sensitiveness to bismuth, but less so than guineapigs, and the lethal dose is somewhere about 0·019 gm. per kilo body-weight. A certain degree of tolerance can be acquired so that twice the dose is needed to kill an habituated animal as compared with a first injection. Guineapigs acquire no such tolerance. Dogs react more strongly, and anything above 0 009 gm. per kilo may lead to symptoms of poisoning, though some dogs can take as much as 0·02 gm. per kilo.

H. Harold Scott.

CHURCHMAN (John W.). **Intravenous Use of Dyes.**—*Jl. Amer. Med. Assoc.* 1925. Dec. 12. Vol. 85. No. 24. pp. 1849-1853. [9 refs.]

Though this paper would at first appear to have no special relation to tropical medicine its consideration is apposite because the general use of such compounds as mercurochrome 220 has been advised in malaria and plague [*ante*, pp. 142-3]. Dr. Churchman in 1913 studied the fate of gentian violet in the animal body and concluded from these and other experiments that it was not possible to kill organisms circulating in the blood by intravascular injection of this drug, and like conclusions have been reached by other experimenters. Evidence, however, from the clinical side seems to conflict with this conclusion, and it is the author's object to see whether these apparent contradictions can be harmonized. He begins by discussing the nature of septicaemia, and writes:—

> "Perhaps we might describe the condition as one which arises when, as a result or complication of a focal infection (which itself may have produced severe symptoms, slight symptoms, or no symptoms at all), the protective barrier between bacteria and host has broken down. Organisms have therefore appeared in the blood, the disease has ceased to be local, and its gravity has at once greatly increased. This focal infection may be obvious (like an inflamed tonsil), or it may be hidden (like an infected heart valve), or it may be difficult and occasionally impossible to demonstrate; but portal of entry into the blood stream there

must have been . . . The micro-organisms have not originated in the blood. They have come somewhence and are going somewhither. Their source is the focus of infection; their destiny, other organs, in which they may set up lesions, or the filtering organs (lymph glands, etc.) where those of them which have escaped the antibacterial defensive mechanism of the circulating blood are either in part or in whole destroyed or eliminated. Eliminate their source, as by complete excision of the focus, and you cut off the supply."

The mere presence of the bacteria in the blood is not the most serious feature. The matter is further complicated by the varying severity of blood infections with bacteria, such as *Staphylococcus aureus* on the one hand and *Streptococcus haemolyticus* on the other. This by itself might account for the conflicting evidence. The striking successes may be due to coincidence, and there is risk of the failures being overlooked; but failures in chemotherapy are inevitable. A bar to experiment is the unfortunate fact that a true bacterial septicaemia is difficult to produce in laboratory animals, and this is one of the reasons why the chemotherapy of bacterial disease lags behind that of parasitic disease.

When dyes such as gentian violet are injected into the blood stream they are rapidly carried to certain organs in which they remain in some concentration for a fairly long period; it is possible that at these sites they may have a much better chance of exerting their effects.

When a syphilitic chancre is cured by an arsenical the effective contact must have been made locally and not in the blood stream. Bacteriostasis, a word introduced by the author and signifying inhibition of growth of bacteria, may play a part in the results reported.

> "The dye may only stop motility, it may check sporulation, it may prevent fission, it may produce a curious condition of the bacteria which can only be described as suspended animation, a condition in which they lie dormant for long periods of time, finally becoming active and virulent again; or it may cause actual death of the organism"

It has been experimentally proved, for gentian violet and other triphenylmethane dyes, that even in high dilution they possess the power of checking the reproductive mechanism of bacteria. If the blood stream and through it the tissues could be kept in a condition inimical to the growth of bacteria this aid might enable the patient to turn defeat into victory. Moreover, the dye may similarly reduce the activity of toxins, as has been shown to occur with fluorescent eosin (FLEXNER and NOGUCHI). A stasis or inhibition of toxin would account for a favourable result just as a stasis or inhibition of bacteria.

Finally, the failure of dyes to effect a "sterilisans magna" under experimental conditions does not absolutely preclude the possibility of their efficacy in the treatment of septicaemia.

A. G. B.

SEIDELIN (H.). Note sur l'emploi de quelques couleurs d'aniline comme désinfectants. **[The Employment of Aniline Dyes as Disinfectants.]**—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 55–57. [3 refs.]

Working alone in Belgian Congo, where major operations have to be done under bad conditions and without skilled assistance, Dr.

Seidelin has since 1918 employed for the skin, instead of tincture of iodine, a solution recommended by McLeod and Bevan-Brown :—

Brilliant Green	1 gm.
Crystal Violet	1 gm.
Alcohol (50 per cent.)	300 cc.

It contains less alcohol than Tr. Iodi, and is therefore less expensive. Owing to its colour, it is known as "Blue." It has no irritating effect and can be used on mucous membrane; he often applies it to an aseptic wound without harmful result. Later he has used it for disinfection of septic wounds and ulcers; he and others find it excellent for ulcus tropicum, and only less successful than complete excision.

A. G. B.

i. Straub (M.). Tetrachloorkoolstofvergiftiging in twaalf gevallen. [**Twelve Cases of Carbon Tetrachloride Poisoning.**]—*Geneesk. Tijdschr. v. Nederl-Indië.* 1925. Vol. 65. No. 5. pp. 624–645. With 3 figs. on 1 plate. [16 refs.]

ii. Kouwenaar (W.). Tetrachloorkoolstof als mijnwormmiddel. [**Carbon Tetrachloride as a Vermifuge in Hookworm Disease.**]—*Ibid.* pp. 646–657.

i. After a mass cure on an estate Straub saw 8 cases of carbon tetrachloride poisoning, 3 (1 fatal) in 350 Chinese, 5 (1 fatal) in 50 Tamils, none in 600 Javanese men and 400 Javanese women. He quotes also 4 cases of poisoning after administration of the drug at the hospital, 3 of which were fatal (1 Tamil, 1 Chinese, 1 Javanese), whilst 1 Javanese woman recovered. Apart from 2 fatal cases in which 2½ and 3 cc. had been given, the dosage was 2 cc. (Chinese and Javanese) and 1½ cc. (Tamils), together with 45 cc. 50 per cent. magnesium sulphate. The drug used was pure according to the tests recommended by the Council on Pharmacy and Chemistry of the American Medical Association, except for a slight difference of the specific gravity (1·598 instead of 1·588 at 25° C.).

The clinical histories of the cases and the post-mortems of the fatal ones are quoted in detail and represented also in tabular form. All cases showed signs of disturbance of function of liver and kidneys. The anatomo-pathological picture was the usual one.

According to expectation in this toxic type of jaundice the serum in the more serious cases gave a positive direct as well as indirect bilirubin reaction of Hymans van den Bergh. The lesions to the kidneys explain the frequent absence of bile acids as well as urobilin from the urine notwithstanding the serious disturbance of the liver function. This failure of the kidneys may be caused by products of autolysis of the liver (Roger, *Presse méd.*, 1918). The lighter cases all showed dropsy, which was not found in the more serious ones. Straub thinks that the slight damage done to the liver in the first group stimulates this organ, resulting in increased metabolism and production of more water which cannot be excreted by the affected kidneys. In the more serious cases this rise of metabolism is not to be found.

Straub's conclusion is: Until all the circumstances predisposing to carbon tetrachloride poisoning are known and can be excluded before the cure, mass cures with carbon tetrachloride, either pure or impure, in any dosage, given in any way, are not to be allowed.

[Ref. thinks that, in view of the apparent harmlessness of the drug in several similar instances, an experience like this should in the first place incite to a closer chemical and toxicological examination of the drug used.]

ii. Kouwenaar gives a symposium of 29 cases (17 Tamils, 7 Javanese, 2 Javanese women and 3 Chinese) of carbon tetrachloride poisoning, of which 4 died (2 Tamils, 1 Javanese woman, 1 Chinese). The dosage was not more than 3 cc. of the pure drug. The cases showed the usual features. Contrary to STRAUB'S experience a marked urobilinuria was present nearly throughout, whilst HAY'S bile acid reaction was positive in cases of clinical jaundice. The biphasic Hymans van den Bergh test was found in 3 out of 5 jaundice cases and in one case without clinical jaundice. In one case Kouwenaar noticed dropsy, in two cases uraemia (1 fatal) ; he thinks that only in serious cases does damage to the kidneys occur. The anatomo-pathological reports show the usual characteristics of carbon tetrachloride poisoning ; in one case there was a pre-existent cirrhosis and cancer of the liver.

The author seriously discountenances the use of the drug even for individual cures.

W. J. Bais.

SMITS (E.). Een eenvoudige reactie bij het onderzoek op de zuiverheid van tetrachloorkoolstof. [**A Simple Reaction for Testing the Purity of Carbon Tetrachloride.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 6. pp. 821–830. [19 refs.]

The advantages of carbon tetrachloride as an anthelmintic are well recognized and account for the attempts to show that the cases of poisoning by the drug are not caused by carbon tetrachloride itself, but by impurities. The series of tests made up by the Council on Pharmacy and Chemistry of the American Medical Association do not, according to Smits, guarantee a uniform pure quality of the drug. He describes a simple test (taken from LUNGE and BERL, Chemisch-technische Untersuchungsmethoden) by which the presence of carbon sulphide is easily shown :

10 cc. carbon tetrachloride are mixed with 10 cc. of a 10 per cent. alcoholic solution of caustic potash. After 1 hour 5 cc. 30 per cent. acetic acid are added. Further addition of a few drops of copper sulphate solution produces a yellow sediment within 2 hours, if carbon sulphide is present.

The same reaction may be used for quantitative determination :—

50 gm. carbon tetrachloride is mixed with equal parts of the alcoholic solution of caustic potash and left to stand for a few hours ; then it is shaken several times with 100 cc. water. The washings are collected and titrated with copper sulphate solution (12,485 gm. of the crystals to 1 litre water), which is added till a drop of the mixture shows free copper sulphate (brown colour by contact of a drop of the washing with a drop of potassium ferrocyanide solution on filtering paper). 1 cc. of the copper sulphate solution is equivalent to 0·0076 gm. of carbon sulphide.

In an addendum another qualitative test is described :—

10 cc. carbon tetrachloride are mixed with 1 cc. spiritus fortior and 1 cc. of a reagent consisting of 0·5 gm. lead acetate, 20 cc. water and 20 gm. caustic potash. 1 part of carbon sulphide in 100,000–200,000 parts of carbon tetrachloride is shown by a brown or black discolouration of the watery part of the mixture.

In samples of the carbon tetrachloride with which STRAUB and KOUWENAAR had cases of more or less serious poisoning (see above) the author found 0·6 per 1,000 carbon sulphide (i.e., less than the maximum quantity allowed by the Council), but other impurities were present the chemical character of which could not be found out with certainty.

Further chemical research on this subject appears to be necessary.

W. J. Bais.

SANTOS (José K.). **A Pharmacognostical Study of** *Chenopodium ambrosioides* **Linnaeus from the Philippines.**—*Philippine Jl. Sci.* 1925. Dec. Vol. 28. No. 4. pp. 529–547. With 41 figs. on 5 plates. [16 refs.]

Of the 50 species of Chenopodium only two or three contain oil of medicinal value. The principal source of chenopodium oil is *Chenopodium ambrosioides* var. *anthelminticum* A. Gray, which is extensively cultivated in Maryland and Missouri. *C. ambrosioides* Linnaeus is the species found in the Philippines where it is widely distributed and the most available local source of the oil. This investigation was undertaken to decide what part of the plant should be used for distillation of the oil. The oil was found to be largely confined to the glandular hairs, which are described as sac-like, and to the embryo. The glandular hairs are specially abundant on both sides of the leaves, on the upper half of the ovary when this is nearly mature, in the crevices or depressions between the ridges on the young portion of the stem and on the surface of the calyx. The figures illustrate these and other points. It is concluded that to obtain the greatest yield of oil the entire plant, except the old part of the stem, should be used, before the fruits and leaves become too mature. The plant should be collected after most of the flowers are open. It is not stated whether wild or cultivated specimens are the better, but it is mentioned that in wild plants in a dry place the glandular hairs were more abundant than in watered plants in cultivation.

A. G. B.

ESSER (A.). Tödliche Vergiftung mit Oleum Chenopodii. [**Fatal Poisoning by Oil of Chenopodium.**]—*Klin. Woch.* 1926. Mar. 19. Vol. 5. No. 12. pp. 511–513. [10 refs.]

The conclusions are to this effect: A boy of 8 received twice or thrice daily for ten days 10 drops of oil of chenopodium, in all 8 gm. He became ill on the 11th day and on the 13th died with cerebral symptoms. The autopsy showed acute emphysema of the lung, slight subacute inflammation of the ileum, cloudy swelling of the liver and kidneys, hyperaemia of the brain and its membranes. Histological examination revealed pronounced fatty degeneration of liver and kidneys, considerable desquamation of kidney epithelium, severe degenerative changes in the endothelium of liver and kidneys, almost complete disappearance of suprarenal fat, and cerebral hyperaemia. The fat present was neutral fat. The morbid changes point to a pure parenchymatous poison and correspond well with the chemical composition of the oil. These changes do not appear to be specific with the possible exception of the endothelial changes.

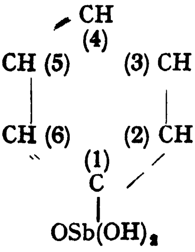
A. G. B.

UHLENHUTH (Paul), KUHN (Philalethes) & SCHMIDT (Hans). Chemotherapeutische Antimonstudien. [**Chemotherapeutic Studies on Antimony.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Nov. 6. Vol. 29. No. 11. pp. 623–650. [66 refs.]

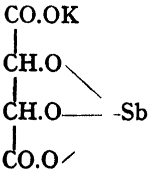
This is an account of chemical and pharmacological work on antimony compounds, which resulted in the introduction of the drug known as "Stibenyl" and more recently of "Stibosan" and "Antimosan." Though antimony compounds have given good results in fowl spirochaetosis and rabbit syphilis, clinical trials have shown that in man they are less valuable anti-syphilitics than arsenic, mercury and bismuth. There is a considerable body of evidence for their value as trypanocidal agents in man and animals, now perhaps only as adjuncts to "Germanin" (Bayer 205). Their value in kala azar, bilharziasis, etc., is well known.

The compounds dealt with in this paper were tested on mice infected with dourine, intraperitoneal injections being made on the third day after infection. The results are based on one injection in each case, and this no doubt accounts for the unfavourable verdict on many of the drugs dealt with. The method is, however, suitable for picking out particularly useful drugs.

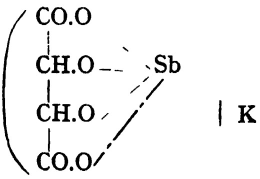
The first two drugs "Stibenyl" and "Stibosan" are derivatives of phenylstibinic acid (Formula I) whilst the third "Antimosan" belongs to the "emetic" series of which sodium and potassium antimonyl tartrates (Formula II*a* or II*b*) are the best known examples.



(I)



(II*a*)



(II*b*)

The difference between the two series is that in the phenylstibinic acid group (Formula I) the therapeutically active element, antimony, Sb, is united directly to carbon whilst in the "emetic" series (Formula II*a* or II*b*) it is joined to oxygen and only through oxygen to carbon. Further, in the first series the antimony is quinquevalent, whilst in the second it is believed to be tervalent.

In the first series it is recognized that variation in the toxicity and therapeutic activity of the antimony is possible by substitution of one or more of the hydrogen atoms in positions 2 to 6 in the benzene hexagon by other atoms or groups such as chlorine (Cl), or the amino- —(NH)$_2$ or hydroxyl (OH) groups. Illustrations of these variations are shown in the following table :—

Name of substance.	Minimum lethal dose. mgm.	Dose usually curative.* mgm.	Antimony in dose usually curative. mgm.	Remarks.
1. Sodium 4-acetylamino-phenylstibinate (Stibenyl) $CH_3CO.NH.C_6H_4.SbO(OH)ONa$.	12	5 (1–2 days)	1·6	Well borne. Curative dose† 7 mgm.
2. Free acid of above in suspension in water.	12	5 (1–2 days)	1·6	Badly borne.
3. Amine salt of 4-amino-phenylstibinic acid $NH_2C_6H_4.SbO(OH)OAm$.	8	5 (2 days)	2·0	Badly borne.
4. Sodium-4-urethano-phenylstibinate $C_2H_5.COONH.C_6H_4$ $SbO(OH)ONa$	5	(2 days)	0·7	Badly borne.
5. Sodium 3-acetylamino-phenylstibinate $CH_3CO.NH.C_6H_4.SbO(OH)ONa$	8	—	—	Trypanocidal dose‡ 5 mgm. (1 day)
6. Sodium 4-hydroxy-phenylstibinate $HO.C_6H_4.SbO(OH)ONa$	8	2 (1–2 days)	0·84	Badly borne.
7. Sodium phenylstibinate $C_6H_5.SbO(OH)ONa$	2 to 3	—	—	Badly borne.
8. Sodium 4-chlorophenyl-stibinate $Cl.C_6H_4.SbO(OH)ONa$	1	—	—	Badly borne. No trypanocicidal effect.
9. Sodium 3-chloro-4-acetylaminophenyl-stibinate (Stibosan) $Cl.(CH_3CO.NH)C_6H_3.SbO(OH)ONa$	5	2 (2 days)	0·62	Moderately well borne.
10. Free acid of above suspended in water.	6 to 8	—	—	Badly borne.
11. Sodium 3-chloro-4-aminophenylstibinate $Cl.(NH_2)C_6H_3.SbO(OH)ONa$	5 to 6	—	—	Trypanocidal dose‡ 1 mgm. (2 to 3 days)

* Cured most of the mice † Cured all mice. ‡ Caused temporary disappearance of trypanosomes.

It will be seen that comparatively slight changes in the structure of these compounds produce considerable differences in their toxicity and therapeutical action ; thus, the substitution of chlorine for a hydrogen atom in position 3 changes "Stibenyl" (1) into "Stibosan" (9), and while increasing the toxicity (M.L.D. — 5 instead of 12 mgm.) also increases the curative power, the dose usually curative being now 2 in place of 5 mgm.

The replacement of the acetylamino-group of "Stibenyl" by chlorine as in No. 8, on the contrary increases the toxicity largely and at the same time destroys the trypanocidal action.

In the emetic series there are three components, the base, potassium (K) in this instance, the active element antimony (Sb) and the acid radicle, in this case tartaric acid. All these components can be and have been varied (compare FARGHER & GRAY, *Journ. Pharm. Exp. Ther.*, 1921, Vol. 18, p. 341), and in general it has been supposed that no matter how the base and the acid radicle are varied in such compounds, the toxicity and therapeutic activity are determined solely by the amount of antimony present, though when potassium is replaced by a therapeutically active base, such as quinine, there may be additional activity due to the quinine. One of the most important points made in this paper is that by making the acid radicle a catechol (1 : 2–dihydroxybenzene) derivative, definite variation in the action of the antimony becomes possible with further changes in the constitution of the molecule. Further, the products are stable to alkali and can be injected intramuscularly as well as intravenously. "Antimosan" produced in this way has an M.L.D. of 8 mgm ; 1 mgm. causes the disappearance of trypanosomes from dourine-infected mice in three hours but they return in 10 to 15 days ; an initial dose of 2 mgm. causes their disappearance without return. Tartar emetic on the contrary was found in this series of experiments to have M.L.D. 0·8 to 1 mgm. Trypanosomes disappeared in three hours after a dose of 0·5 mgm. but returned in from 13 to 20 days, and with one exception it was not found possible to ensure their complete disappearance.

Clinical trials with "Antimosan" are still in progress but it has been found less useful than stibosan in kala azar though promising results have been obtained with it in multiple sclerosis.

T. A. Henry.

MATTEI (Ch.). Rythme général et rythme nycthéméral de l'élimination urinaire du chlorhydrate d'émétine absorbé par la voie hypodermique. **[The General Rhythm and the 24-Hour Rhythm of Urinary Excretion of Emetine Hydrochloride given Subcutaneously.]**—*C.R. Soc. Biol.* 1925. Dec. 11. Vol. 93. No. 36. pp. 1449–1452. With 2 charts in text. [2 refs.]

The author has shown that the excretion of emetine is discontinuous and prolonged. (This *Bulletin*, Vol. 16, p. 243.) The drug appears in the urine 20–50 minutes after the hypodermic injection of 0·04 gm., but during a course of treatment not more than about one-sixth passes by that channel. The elimination proceeds by fits, active periods alternating with periods when little or none is found in the urine. The jerky curve is illustrated. Daily observations show that elimination in patients who have received 0·16 to 0·58 gm. in 3 or 6 days may last 5–8 weeks. Studying the 24-hour rhythm, the author found that during a course of treatment the day excretion exceeds that of the night in the proportion of 2 or 3 to 1 ; at the end of the course the proportions are about equal and during the period of discontinuous excretion the night emetine exceeds the day emetine. These observations are explained by a rapid excretion of some of the circulating emetine shortly after injection, and hence in the day, whereas later it is emetine from the tissues and viscera that is released.

A. G. B.

BERETERVIDE (Enrique) & POZZO (Fernando). Polineuritis emetínica. **[Polyneuritis due to Emetine.]**—*Semana Médica.* 1925. Nov. 26. Vol. 32. No. 48. (1663). pp. 1366–1367.

A child of 2½ years was attacked by dysentery, passing 20 stools daily. Treatment with emetine was undertaken and in 18 days 0·35 cgm. had been administered. The dysenteric symptoms improved within the first week, but the drug was continued as the temperature remained above normal. The patient now showed general weakness, inability to swallow, could not stand and had difficulty in grasping objects. These symptoms did not disappear for a month after stopping the emetine. Five weeks later the dysentery returned and emetine was again given, 0·01 mgm. daily for six injections, followed by enemas of 2 per cent. Yatren 105 with excellent results. The case is recorded because it is believed to be the first instance of emetine poisoning in a child.

H. Harold Scott.

BÉGUET (M.). Etudes sur l'action thérapeutique des ferments lactiques. Première partie. Les doses massives de cultures fraiches de ferments lactiques dans le traitement des entérites. [**Large Doses of Fresh Cultures of Lactic Ferments in the Treatment of Enteritis.**]—*Arch. Inst. Pasteur d'Algérie.* 1925. Sept. Vol. 3. No. 3. pp. 299–312. [2 refs.]

The author uses pure cultures, 24 hours to four days old, of lactic ferments in separated milk or, rarely, in vegetable bouillon with lactose, in daily doses of 200–800 gm. for infants and 500–1500 gm. for adults. The germ is a diplococcus from the butter industry, some of the reactions of which are given; it develops readily at summer temperature in Algeria. Instructions are given for domestic preparation of the ferment. Of infantile enteritis 350 cases were treated and of acute or chronic enteritis in older persons 160, while there were 42 cases in which the intestinal symptoms complicated an infectious disease.

The results were rapid reduction of intestinal fermentation, deodorization and regularization of the stools; there is also a preventive action in infants, in the hot season or after weaning. The author suggests that the systematic use of these cultures will lead to a notable diminution of infantile enteritis in Algeria. Details of cases are given. [No bacteriological investigation is mentioned.]

A. G. B.

BURNET (Et.). Actions d'entrainement entre races et espèces microbiennes. [**Transmission of Characters from One Microorganism to Another.**]—*Arch. Inst. Pasteur de Tunis.* 1925. Dec. Vol. 14. No. 4. pp. 384–403. [20 refs.]

This is a very interesting paper dealing with certain general biological characteristics of bacteria and especially with the transmission of properties, due to juxtaposition during growth. The character chiefly studied is that of flocculation by heat. Thus *M. melitensis*, which is not thermo-agglutinable, may be rendered so by growth alongside the thermo-agglutinable *M. paramelitensis* in a divided collodion sac. It is not even necessary that the *paramelitensis* should be living; for if the killed organism be added to bouillon, which is then sown with *melitensis* and incubated for 3 to 5 days, the latter will, when re-sown on nutrient agar medium and incubated 3 days, show itself to be thermo-agglutinable. Actual growth of the organism is necessary to acquirement of the new property.

Antigenic characters as well as physico-chemical may be transmitted. Thus *M. melitensis* acquires the antigenic characters of the *paramelitensis* by culture alongside the latter—such as agglutinability by normal sera, non-agglutinability by anti-melitensis serum, diminution of agglutinogenic power in the rabbit. The acquirement of new characters is in the direction *melitensis* to *paramelitensis* and not, as a rule, the reverse. This acquirement of characters by members of the *melitensis-abortus* group may be called inter-specific. But it may be also non-specific, that is to say, modification of thermo-agglutinable property and of sero-agglutinable property may be acquired by one species of organism from another which is in no way related to it.

The bearing of these findings on malignant growth, on the nature of the bacteriophage, etc., is commented on. Bacteria which are attacked by the bacteriophage, and which are resistant, take on a coccal form, surround themselves by a mucous capsule and have a raised virulence. Such resistant organisms are inagglutinable and their fermentative characters become modified. The Shiga bacillus ferments maltose; the Flexner bacillus ferments glucose, laevulose, mannite, and so on. This influence of symbiosis upon the characters of bacteria, their mutations, their acquisition of permanently changed characters, etc., may well afford material for intensive study.

The study here published of transmission of certain characters from one organism to another is an important contribution to more general and complicated problems.

W. F. Harvey.

FLU (P. C.). Komplementbindingsproeven met konijnen-serum tegenover bacteriophagen en bacterie-extracten. [**Complement Fixation Test with Rabbit Serum for Bacteriophage and Bacterial Extracts.**]—*Nederl. Tijdschr. v. Geneesk.* 1925. Nov. 21. 69th Year. 2nd Half. No. 21. pp. 2285–2300. [9 refs.] also in German in *Cent. f. Bakt.* I. Abt. Orig. 1926. Jan. 30. Vol. 97. No. 2-3. pp. 224–240. [9 refs.]

The "bacteriophage" discovered by d'HERELLE is regarded by him as an obligate parasite. Not only does he so regard it, but he also maintains that it is a parasite of *B. coli* and is a single species, which undergoes much modification in becoming parasitic upon another species of bacteria. The proof of unity of species was based largely upon complement fixation tests. Rabbits, immunized with the clear bacteriophage bouillon culture of an organism such as the Shiga bacillus, furnish a serum which gives complement fixation with the bacteriophage used and also with the culture of the organism. Not only does the serum react thus with these antigens however, but also with other bacteriophage antigens, such as haemorrhagic septicaemia and plague. Other workers have contested these findings of d'HERELLE and, it may be, regard bacteriophage as of multiple species. They ascribe the positive complement fixation tests to non-specific antigen common to all bacterial substance, and so on. Flu takes an entirely different view of these complement fixation tests and prefers, in explanation of them, the known occurrence of complement fixation effect that is attachable to rabbit serum in particular. He sets out certain results of his experimentation, which afford a basis for this view:—

(1) The serum of a certain percentage of normal rabbits gives a complement fixation reaction with bacteriophage and with extracts of various bacteria, though seldom with bacterial suspensions, which cannot be differentiated from a specific reaction.

(2) The serum of rabbits, which have received bacteriophage antigen intravenously, gives a complement fixation reaction not only with the bacteriophage which was used in immunization, but also with all other

bacteriophages and filtrates of old bouillon cultures of various bacteria, though very seldom with bacterial suspensions.

(3) The serum of rabbits, which have been immunized with extracts of bacteria and with filtrates of old bouillon cultures of these bacteria, sometimes gives only specific complement fixation, although it may also give a positive reaction with non-specific bacteriophage and bacterial extracts.

(4) The serum of rabbits, which have been immunized with bacterial suspensions, gives as a rule a positive complement fixation reaction only with those bacteria which have been used in the immunization.

D'HERELLE then is not entitled to draw conclusions as to the unity of species of bacteriophage from his complement fixation experiments, although there is nothing in these tests actually to negative the idea of derivation of all bacteriophages from the one form. It is the view of Flu, however, that the results of the experiments performed by him and others, in which normal rabbit sera as well as immunized rabbit sera give complement fixation with a whole range of antigens, are to be explained by the known tendency of this to happen with rabbit serum—that is to say, that the phenomenon is not attributable to the singleness of species of the bacteriophage nor to a non-specific common protein of lysed bacterial substance. He issues a warning to experimenters working with rabbit sera in complement fixation tests of all kinds to beware of this tendency.

W. F. Harvey.

KOLLATH (Werner) & LEICHTENTRITT (Bruno) Ueber die fragliche Bildung von Vitamin Bakterien. [**Do Bacteria produce Vitamins?**]—*Cent. f. Bakt.* I. Abt. Orig. 1926. Jan. 30. Vol. 97. No. 2-3. pp. 119–125. With 8 charts in text. [13 refs.]

The questions which the authors set out to answer are :—

(1) Whether bacteria can produce sufficient vitamin to enable them to be used for the prevention or cure of deficiency disease ; (2) whether the growth promoting effect of certain bacteria on other bacteria, such as the influenza bacillus, is due to vitamin C.

The diet, a scorbutic one, given to the experimental guineapigs consisted of sterilized oats and sterilized dried milk. Intestinal bacteria isolated from normal guineapigs were chiefly used, and special investigation was made into the vitamin producing qualities of Friedlaender's bacillus, which has been shown to promote the growth of the influenza bacillus.

Yeasts have been shown to produce vitamin B when grown on agar containing a substance which promoted the growth of the yeast, such as potato. A potato medium therefore was tested along with ordinary nutrient agar. The testing guineapigs were fed by means of a pipette. As a preliminary, the media used were shown, by feeding experiment, to contain no vitamin, or at all events nothing but negligible quantities. The doses used (total quantities) were 3·5 gm. *B. coli*, 29 gm. bacterial mixture, 13 gm. living Friedlaender's bacillus, and 2 up to 323 gm. of Friedlaender's bacillus heated 30 minutes at 56° C.

The results were that no evidence could be found—

(1) for the production of antiscorbutic vitamin by the bacteria themselves ; (2) of vitamin being taken up from the nutrient medium ; (3) of the identity of true vitamin with the growth promoting substance for the influenza bacillus.

W. F. Harvey.

IYENGAR (K. R. K.). **An Attempt to increase the Virulence of a Micro-organism by Method of Culture.**—*Indian Jl. Med. Res.* 1926. Vol. 13. No. 3. pp. 555–557. [2 refs.]

Four strains of *B. avisepticus* were, when freshly isolated, fatal to pigeons in doses (intravenous) of 0·000,000,000,1 to 0·000,000,001 mgm., but had greatly lost in virulence with repeated subculture on ordinary agar. The author attempted to increase the virulence by subculturing on blood agar, which medium had previously been shown capable of maintaining the organism in its original virulent state. The attempt, however, proved unsuccessful after 14 days' daily subculture. No difficulty was experienced in raising the virulence by animal passage.

W. F. Harvey.

PERUZZI (Mario). **A Morphological and Cultural Investigation of** *Vibriothrix Zeylanica* **Castellani.**—*Jl. Trop. Med. & Hyg.* 1926. Feb. 1. Vol. 29. No. 3. pp. 44–47. With 30 figs. on 2 plates. [8 refs.]

This organism is found in dysenteric faeces and is apt to cause difficulty, if present, in the isolation of *B. dysenteriae* Shiga. One of the outstanding characters of the organism is its polymorphic appearance—it may be vibrio-like, bacillus-like, spirillum-like, coccus-like, filamentous and branched. Claviform and large globose elements are found in cultures. Giemsa staining shows the presence of a highly differentiated nuclear apparatus. Ordinary bouillon cultures were not filtrable, but a certain number of blood broth cultures could be passed through a Berkefeld N candle. The organism caused the death of guineapigs by intraperitoneal injection only in massive doses.

W. F. Harvey.

HUTCHINSON (C. M.). **Photography from the Microscope.**—*Indian Jl. Med. Res.* 1926. Jan. Vol. 13. No. 3. pp. 449–466. With 25 figs. on 5 plates.

The author gives in some detail instruction and advice on the apparatus and manipulations necessary for the production of good photo-micrographs. He prefers, if any considerable amount of photomicrography is to be done, the horizontal type of camera to the vertical. The various parts of the microscope are taken *seriatim* in respect of their suitability. A 3 mm. apochromatic objective is better than the 2 mm. For low power photography one of that class of objectives specially designed for the purpose and designated anastigmat, microplanar, microsummar, or holostigmat is essential, because of the flatness of field which is given. Magnification is preferably obtained by the combination of low power objectives and either high oculars or camera extension. Of these alternatives, camera extension is in many cases the better. For good photomicrographic work an achromatic substage condenser is required. Electric illumination, if available, will be preferred. The operations preliminary to exposure, in their order, are given as :—(1) Centring of microscope to camera ; (2) centring of objectives of microscope ; (3) centring of illuminant through the microscope tube in the absence of objective, condenser, and focussing screen ; (4) centring of substage condenser, with low power objective and ocular, by bringing the minutest aperture of the iris diaphragm to a focus on the ground glass screen and centring the image of this aperture; (5) Determination of the magnification required and selection of appropriate substage condenser; (6) arrangement of critical illumination; (7) adjustment for even illumination.

The subjects of light filters and of suitable photographic plates receive consideration, as also those of exposure and development.

W. F. Harvey.

Koch (Karl). Ein neuer Apparat zum Zählen von Kolonien. [**A New Apparatus for counting Colonies.**]—*Cent. f. Bakt.* I. Abt., Orig. 1925. Nov. 25. Vol. 96. No. 7-8. pp. 454–456. With 1 text fig.

The ordinary methods of counting plate colonies, if prolonged, involve considerable muscular and eye strain. Koch has invented a piece of apparatus which makes this enumeration perfectly easy. It consists of a three-sided frame with a top formed by a glass plate divided up into the squares which are commonly used to facilitate the counting of colonies. The sides are blackened and shut off all light from the front and laterally. Within the frame is a mirror, plane on one side and concave on the other, capable of rotation about a transverse axis and of being raised vertically. The plate with colonies is placed on the squared glass top and light thrown downwards through it on to the mirror. The observer sees the image of squares and colonies together in the mirror and, if the concave side be used, with some degree of magnification. Greater magnification, if required, could be obtained by the interposition of a lens system between plate and mirror. Ordinarily the colonies are viewed by transmitted light and reflection from the mirror. A dark ground effect can be obtained by using light at right angles, instead of from above downwards. If the colonies are growing on opaque media, the Petri dish must be used inverted and must be strongly illuminated through its rim. Single colonies may very easily be picked off the plate and transferred in subculture without a microscope. The colonies are viewed in this apparatus with both eyes.

W. F. Harvey.

Günther (Reinhard). Beobachtungen ueber klimatische Bubonen bei Seeleuten. [**Climatic Bubo in Seamen.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Oct. 15. Vol. 29. No. 10. pp. 546–554. [15 refs.]

The author's conclusions may be quoted first:—Though the etiology and epidemiology of climatic bubo remain uncertain, evidence points to the affection being a venereal disease. At the Hamburg Tropical Diseases Institute 35 cases were studied between 1921 and 1925. Most of the cases occurred in ships' crews. The probable source of infection was in the Mediterranean 3, Africa 6, South America 5, Java 9, Eastern Asia 6, Australia 1, Calcutta 3, Black Sea 2. The patients were between 21 and 31 years of age and all had had promiscuous sexual intercourse abroad. A fact worthy of note is that in one ship at the same time 3 cases occurred, in a second ship at the same time

3 other cases, and in a third ship 2 cases. In two, lesions appeared 4 weeks after leaving Java, in three 8 weeks out from South America, in three 8 weeks from Eastern Asia. The incubation period from the time of coitus to the appearance of the bubo is probably from 3–8 weeks. In 15 the left, in 9 the right, in 11 both inguinal regions were affected.

Constitutional symptoms were minimal, except in one case, neglected over a period of six months, with the pelvic glands involved, in which high fever, cachexia and secondary anaemia were present. Neither splenic nor hepatic enlargement was noted. Eosinophilia as described by others was not present ; in two the mononuclear count was somewhat raised, in others there was a lymphocytosis. In no case was any characteristic blood picture found. In size the swellings varied from a walnut to a man's fist. Deep-seated glands are commonly attacked ; in 62 per cent. the pelvic glands were involved, a point not generally recognized. In one instance the glands in the pelvic basin formed a mass so large, and of such a wooden hardness and so resistant to treatment, that resort was had to X-ray examination to exclude a bony tumour. The tendency to spread and the marked induration is characteristic of some cases.

Though climatic bubo characteristically goes on to abscess formation the degree of periglandular infiltration is as a rule small. Confluent softening seldom occurs and the abscess cavity with its seropurulent necrotic contents is small. Perforation occurs with the formation of fistulae, the surrounding skin being reddish or purple in colour but shows no other changes. Opposed to the findings of many observers (ROST 18 per cent.), breaking down occurred in 77 per cent. of the author's cases (comp. RUGE 40 per cent. and WERTH 65 per cent.). Lymphangitis and other inflammatory processes were not observed nor pigmentary changes about the scars.

Two cases presented scars of old chancres on the penis, none other showed any genital lesion. The cases, however, came under observation long after the date of infection. Many observers believe that such a lesion does occur in the form of a pimple, a herpetic rash or a small ulcer which clears up untreated in a very short time (MÜLLER and JUSTI).

Comprehensive examination of gland juice, etc., by microscopic and inoculation methods shed no light on the etiology of the disease. The histological picture is that of a proliferative inflammation with degeneration of tissues.

The treatment adopted was by intravenous injections of tartar emetic, stibenyl, emetine, etc., local applications, X-rays for deeply situated gland masses and surgical measures when necessary.

H. S. Stannus.

DE BELLARD (E. P.) & URIBE (César). Contribución al estudio de la poradenitis inguinal subaguda en Venezuela. (Trabajo presentado al IV Congreso Venezolano de medicina Caracas—1925.) [**Subacute Inguinal Poradenitis in Venezuela.**]—80 pp. With 11 charts in text & 40 figs. on 8 plates. [66 refs.] 1925. Caracas : Tipografia Americana.

This work is a useful monograph summarizing our knowledge of a condition which goes by various names—climatic bubo, inguinal adenopathy, etc.—and is a study based on 22 cases under the author's care. Introductory pages on the history of the opinions held as to the nature of the affection are followed by a succinct account of the clinical forms and course. Dr. Uribe contributes an interesting section on the morbid anatomy and histology of glands removed from 13 cases and of the condition produced in guineapigs, white rats, young rabbits and a monkey by inoculation of material prepared from these glands. Some of the glands removed were hard and fibrotic, with much periadenitis ; others contained necrotic and haemorrhagic foci ; in short, the lesions found varied considerably, as we would expect in a chronic inflammatory condition such as this. These are illustrated by plates of photographs showing the naked-eye and microscopic appearances. A fairly characteristic formation is what is called a "stellar abscess" in which a central homogeneous mass is seen invaded by polymorphonuclears and large mononuclear cells with chromatic inclusions, and external to these a wall of epithelioid cells, but separated by an acellular zone thrown into folds or radiating lines ; hence the name. Inoculation of saline emulsions of glands from two cases gave positive results. In the monkey 1 cc. was injected into the left side of the prepuce. Two weeks later there was a red tense swelling at the base of the penis and in four weeks the inguinal glands began to enlarge, more on the right side. Two weeks later one of these was removed and section showed the "stellar abscesses", but no chromatic inclusions in the mononuclear cells.

The succeeding chapters are concerned with the symptomatology, differential diagnosis, and prognosis, and do not call for detailed mention. The usual methods of treatment are briefly described, the use of emetine, intravenous injection of Lugol's iodine solution, local injection of iodine or iodoform in xylol and paraffin, and the use of X-rays, but the author himself lays stress on early extirpation of the affected glands, and subsequent maintenance of asepsis by hydrogen peroxide followed by mercurochrome dressings.

Pseudo-elephantiasis has been reported as following extensive extirpation, but such has not come under the authors' own observation. The last section of the work consists of a detailed account of each of the 22 cases on which the above study is based.

H. Harold Scott.

Walravens (P.). La meningite cerebro-spinale au Katanga. [**Cerebrospinal Meningitis in the Katanga.**]—*Bull. Méd. du Katanga.* 1925. Dec. Vol. 2. No. 6. pp. 256–258.

Whereas in 1923 and 1924 meningococci were found in the cerebrospinal fluid of negro patients three and four times, in 1925 92 examinations resulted in 48 positive findings. Treatment with stock serums having proved unsatisfactory several strains were isolated and tested against serums sent by Sir Spencer Lister from Johannesburg. Lister had isolated strains 1, II and III of Gordon and another which he named E. The author's agglutination tests showed that of 15 strains 13 were agglutinated exclusively by serum E, one by I, II and III serums as well, and one by none. The tests were carried out at 59° for three hours.

A. G. B.

i. Schükry (Jchsan). Ueber die Spatzsche Methode zur Schnelldiagnose der Paralyse und ueber das Vorkommen von Paralyse in der Türkei. [**The Spatz Method for Rapid Diagnosis of General Paralysis: the Incidence of General Paralysis in Turkey.**]—*Muench. Med. Woch.* 1925. Nov. 20. Vol. 72. No. 47. p. 2011. [5 refs.]

ii. Schükri (Ahmed). Ueber das Vorkommen von progressiver Paralyse in der Türkei.—*Ibid.* 1926. Jan. 8. Vol. 73. No. 2. pp. 64–65.

i. Of 147 necropsies performed at the lunatic asylum in Constantinople 37 were shown by the Spatz method to be cases of general paralysis, i.e., 25 per cent. This causes the author to doubt the generally accepted view that in Asia Minor though syphilis is common G.P. is very rare. He notes that since modern diagnostic methods (of which he gives a list of seven concerned with C.S.F. examination) have come into use, the percentage of general paralysis at his Institute has risen considerably. In 1923 7·5 per cent. of the male admissions and 2·5 of the female were for this disease. The inference is that formerly many cases were not diagnosed correctly. The calling and place of residence of the 35 cases admitted in 1923 is given and it is stated that peasants from the interior of Asia Minor were among them. The author thinks that time is ripe for an international statistical investigation of the incidence of general paralysis outside Europe, with the aid of modern diagnostic methods. If it is rarer in Asia Minor than in Europe, as he believes is the case, he suggests that the widespread malaria has been a protection.

ii. In this note the author gives information from a Greek and Armenian institution in Constantinople. Of 318 Greek admissions to the neurological section of the hospital in 1923 and 1924 9·5 per cent. were general paralytics and of 164 Armenians 14 per cent. The male paralytics largely outnumbered the female (37 to 6).

A. G. B.

Brown (W. L.) & Brown (C. P.). **A Case of Tularemia.**—*Jl. Amer. Med. Assoc.* 1925. Dec. 26. Vol. 85. No. 26. p. 2033. [1 ref.]

This case occurred at El Paso in Texas. The patient was bitten in the cheek by some largish insect. Within 12 hours the glands on the corresponding side of the neck were inflamed, and within 48 hours all the symptoms of a serious acute septic fever had developed, with drenching sweats and rapid loss of weight—to the extent of 16 lb. in eight days. The site of the bite showed as a large elevated indurated papule having a core which came away on the 8–10th day leaving a punched out hole. Two guineapigs inoculated from the sore died in five days with the typical necrotic foci in spleen and liver; but two others inoculated a month later with pus from the suppurating cervical glands remained quite healthy.

A. Alcock.

Seidelin (H.). Sur le traitement de certains abcès sans incision. [**The Treatment of Certain Abscesses without Incision.**]—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 59–63. [2 refs.]

Among native labourers in Belgian Congo abscesses are common, especially inguinal and crural buboes. These were formerly treated by incision and drainage; but much time was lost and the native put off coming owing to his fear of the knife. For some years Dr. Seidelin has substituted puncture and the introduction of antiseptic solutions. His technique is as follows:—

> The puncture is made in the centre of the abscess with a hypodermic needle of fine or moderate calibre and a glass syringe of 2, 5 or 10 cc. For deep abscesses the needle is longer and the bore greater. When the needle reaches the abscess if there is much tension pus may flow into the barrel. As soon as the flow ceases, or the patient complains of pain, inject 1 or 2 cc. of a 2 per cent. solution of novocaine or eucaine containing a very small quantity (0·00015 gm. per cc.) of adrenalin. If there is no flow the injection is made at once. When pain has ceased, or after 2 or 3 minutes, light aspiration is made, but if nothing results a little electrosol is injected (hypochlorous solution prepared by electrolysis)†. Now aspirate again and the pus, now liquefied, flows easily. Continue to wash out by electrosol injections following aspiration till fluid comes out clear, but never introduce so much as to produce pain and tension. After the last irrigation inject some drops or 1 or 2 cc. and leave in the cavity.

This technique was at first adopted for inguinal buboes, punctured daily, with recovery in 5–6 days. In most cases the patient continues at work even when 7 to 8 punctures are necessary. Among cases treated have been crural adenitis, axillary abscess, abscess of face, limbs and perineum. A case is cited of a deep femoral abscess, of the myositis purulenta tropica type (Laigret & Lefrou, this *Bulletin*, Vol. 20, p. 28) on the back of the thigh, in which the needle found pus only after a tough passage of 7 cm., and 15 cc. of chocolate pus came away. Puncture and irrigation was done daily for six days and twice afterwards. After the first irrigation the patient was able to walk to the dispensary, but for precaution was kept in the intervals at rest. Another patient with a similar affection treated by incision and drainage had much more pain and it was a fortnight before he could resume his work. Other cases are briefly cited including one of acute abscess of the hand; here pain was increased by the puncture and an incision was necessary.

Puncture causes little or no pain, recovery is speedier than with incision and the whole procedure is cleanly; large dressings are unnecessary and the skin does not suffer irritation. Again, being without fear the patients do not put off treatment. Both anaesthesia and electrosol injection are necessary. The anaesthetic solution may be purchased in ampoules or prepared on the spot. The electrosol solution is that prepared after the formula of Beattie, Lewis & Gee; ordinary hypochlorite of soda is used by a colleague but is less effective. The only drawback to this treatment is the length of the séance—10–15 minutes—but fewer dressings are required.

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† See Beattie, Lewis & Gee, *Brit. Med. Jl.*, 1917, Vol. i, p. 256, where the simple apparatus is figured; 3 per cent. sodium chloride is used.

Dr. Seidelin remarks that according to old authors simple wounds heal more quickly and suppurate less in the tropics than in Europe; with this he agrees and he suggests that for the puncture method there is more scope in the tropics than in Europe.

A. G. B.

Roegholt (M. N.). Appendicitis in Ned.-Indië. **[Appendicitis in the Dutch Indies.]**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 5. pp. 561–567.

Roegholt maintains that appendicitis is not a "rare" disease in the Dutch East Indies. He comments upon the relativity of the word "rare". With reference to Lichtenstein's remarks (see this *Bulletin*, Vol. 22, p. 679) about the necessity of excluding amoebiasis as an etiological factor, he emphasizes the urgency of appendectomy in acute cases, whatever the cause may be.

[The question of the incidence of appendicitis in the Malay race can be solved only by proper sickness statistics and not by articles, founded upon personal impressions.]

W. J. Bais.

de Langen (C. D.). Polyarthritis epidemica bij kinderen. **[Epidemic Polyarthritis in Children.]**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 5. pp. 529–539. With 5 charts in text.

Inflammations of the joints in natives of tropical countries are usually to be attributed to syphilis, yaws, or gonorrhoea. Tuberculosis of the joints is not common and gout is rare. The only epidemic joint affection in the Dutch East Indies is dengue.

The author now describes an epidemic of 18 cases of an acute feverish polyarthritis among 30 children in one ward of his hospital. No adults (doctors or attendants) were affected and the epidemic did not spread to other wards. The fever lasted on an average 24 days; a pronounced leucocytosis was found (12,000–21,000). There were no complications and all the children recovered completely. As for the etiology of this epidemic the author is at a loss. Bacteriological examination of the purulent liquor obtained from the joints as well as animal inoculation of the same (monkeys) yielded negative results. The possibility remains open that the gonococcus was responsible, as it was found in 90 per cent. of the girls in this ward. Yet the clinical picture differed widely from gonorrhoeic arthritis and further investigation showed the presence of gonococci in 80 per cent. of native girls at the time of admission to the hospital.

W. J. Bais.

Pattiradjawane. Zeldzame localisaties van het ulcus tropicum. **[Tropical Ulcer in Unusual Sites.]**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 5. pp. 568–571. With 2 figs. on 1 plate.

Reports upon two cases of tropical ulcer of the penis and three of the labium majus, with fusiform bacilli and spirochaetae in the smears. Ulcus tropicum is most common at Sourabaya during the rainy season.

W. J. Bais.

PATTIRADJAWANE. Reargontherapie bij acute en subacute urethritis gonorrhoica. [**Reargon Treatment in Acute and Subacute Gonorrhoeal Urethritis.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 5. pp. 658–660.

Intra-urethral injections, five times per day, of 10–12 cc. 5 per cent. solution of reargon caused definite disappearance of the gonococci in 10 out of 14 patients with acute urethritis within 5–10 days. This painless treatment is strongly recommended by the author.

W. J. Bais.

PAPADOPOULO (Jean P.). Pasteurellose uréthrale. [**Urethritis due to a Pasteurella.**]—*C.R. Soc. Biol.* 1925. Nov. 13. Vol. 93. No. 32. pp. 1139–1140.

The author, who writes from the Bacteriological Laboratory, University of Athens, says that six cases of this affection have been studied at Alexandria. It began with epidydimitis, lasting 8–10 days, and fever, followed, without previous coitus, by a discharge which was often chronic and resistant to treatment. In one case the organism was isolated twice from the prostatic fluid and three times from the sperm; in others it was found in the discharge and the urine. It is a non-motile coccobacillus not coloured by Gram, with bipolar staining (*en navette*), polymorphous but usually oval. It is aerobic, and grows well on the usual media. Its pathogenicity seems to be small. It is slightly pathogenic to the rabbit and more so to man and may be confounded with the gonococcus by unskilled persons.

A. G. B.

TSURUMI (M.). **Early Diagnosis of Smallpox by the Initial Exanthem.**—*Jl. Roy. San. Inst.* 1925. Dec. Vol. 46. No. 7. pp. 299–302.

The observations are based on a study of 103 patients admitted to the Dairen Isolation Hospital in 1917–18. The initial exanthem is classified as haemorrhagic, scarlet-fever-like or measles-like. It was most marked on the vaccinated part, unless ten years had elapsed since the last vaccination. An initial exanthem does not necessarily guarantee a light attack, especially if it is haemorrhagic, but it is most usual in varioloid. It was seen in at least 39 of the 103 patients.

A. G. B.

CLELAND (J. B.). **Injuries and Diseases of Man in Australia attributable to Animals and Plants.**—Reprinted from the *Adelaide Medical Students' Society "Review"* by The Mail Newspapers, Limited, General Printers, Adelaide. 8 pp.

This is a separate reprint of a paper already noticed in Vol. 22, No. 4, of this *Bulletin*. It is a compilation from published Australian records of injuries inflicted by aborigines as well as by mammals, fishes, arthropods, leeches, and zoophytes.

A. Alcock.

REVIEWS AND NOTICES

GERSTMANN (Josef) [Assistent der Universitatsklinik für Psychiatrie und Nervenkrankheiten in Wien] Die Malariabehandlung der progressiven Paralyse. Unspezifische Therapie der Metalues des Zentralnervensystems mittels künstlicher Erzeugung einer akuten Infektionskrankheit Mit einem Vorwort von WAGNER-JAUREGG (Julius) [**The Malaria Treatment of General Paralysis. Nonspecific Therapy of Metasyphilis of the Central Nervous System by Artificial Production of an Acute Infectious Disease.**]—pp vi+229 With 16 text figs 1925 Wien Verlag von Julius Springer [Price 12 Gm (paper cover), 13 20 Gm (bound)]

The author advises that the benign tertian parasite should be invariably used as the therapeutic agent The quartan parasite can be influenced less readily by quinine and the malignant tertian is not only too dangerous, but also too apt to relapse Of two strains of benign tertian parasite in use at WAGNER JAUREGG's clinic one has reached the 100th passage and the other the 85th passage through man without any change in the length of the incubation-period the height of the fever, the asexual pathological or therapeutic characters Neither of the strains have ever come into contact with quinine and it is suggested that this is the cause of the parasites not being quinine-resistant [A strain which I have been using continuously for 2½ years and which has reached its 38th passage, has frequently come into contact with quinine and yet it is not quinine-resistant—G de M R] Blood withdrawn during the incubation period has produced malaria in another patient The incubation-period was longer after intradermal than after subcutaneous blood inoculation Successful inoculations have occurred with prepared malarial blood kept for 92 hours Korteweg's "initial fever" was not always present in patients who had not previously suffered with malaria As a routine ·5 gm of quinine bisulphate are given twice a day by mouth for 3 days followed by once a day for 4 days No relapses of malaria have occurred Enlargement of the spleen or liver is rare, although with re infections enlargements of the spleen are more common During the past 2 years no gametes have been found although they were present in the early passages In 19 anopheline mosquitoes fed on paralytics infected with malaria, no oocysts or sporozoites could be found Mosquitoes fed on similar cases failed to infect 6 other paralytics when allowed to bite them A few cases did not develop malaria even after 5 inoculations although some of the injections were given intravenously Re-infection with the same and with another strain produced milder attacks of malaria, and if shortly after the first infection, spontaneous cessation of the fever occurred

A strain of *S duttoni* which has been kept alive in mice for 12½ years is still infective for men The European relapsing fever is unsuitable as a therapeutic agent Salvarsan and neosalvarsan have no effect on the above strain when in man, but do affect it when in mice Passage of the strain through the tick did not remove this immunity to salvarsan Relapsing fever developed after the infected material was injected into the cerebrospinal fluid Fifty-one days after the last attack of fever, the cerebrospinal fluid of paralytics has carried infection The length of the incubation-period is from 3 to 11 days, but varies with the number of spirochaetes injected The fever is very irregular, there may be fever-free intervals of 48, or more, hours' duration, and the total duration of the fever may be several months The fever cures itself, but, in spite of generous salvarsan treatment, relapses occur until the infection dies out There are usually no severe symptoms There may be a marked leucocytosis during or immediately preceding the fever Although natural immunity to relapsing fever is very rare, STEINER has been unable to re-infect cases 2½ years after the primary infection From the therapeutic aspect malaria appears to be preferable to relapsing fever for the treatment of general paralysis

Gerstmann reports on the results of the treatment of 400 cases of general paralysis with malaria, patients in all stages of the disease being included Two years after treatment good remissions were present in 33 per cent and incomplete remissions or stationary results, in 14 25 per cent These figures exclude all cases dying of intercurrent disease during remissions and all cases whose after-history could not be traced Three complete remissions have now persisted for from 6½ to 7½ years Comparisons are given between the number and duration of remissions in untreated cases and those treated with malaria to the advantage of the latter The percentage of remissions is from 4 to 7 times greater in the treated cases With regard to the mode of action of malaria the author states that we do not know anything about the cause of the improvement, except that the fever is not the essential agent

This book should prove of value to those actively engaged in the treatment of general paralysis The majority of the chief points relating to tropical diseases are summarized above A comprehensive bibliography is included

G de M Rudolf

MENSE (Carl) **Handbuch der Tropenkrankheiten.** 3rd Edition Vol 4—pp xii+762 With 149 figs & 29 plates 1926 Leipzig Verlag von Johann Ambrosius Barth [Price Rm 66 unbound, 70 bound]

The experience of medical men in Europe during the war has led to the general recognition of the fact that many of the so called tropical diseases are of considerable importance to others than practitioners in the Tropics Happily many of the diseases with which tropical medicine is concerned are no longer endemic in this and neighbouring countries, but several of them are of much less rare occurrence in Europe than was formerly supposed and in these days of easy and rapid travel the general practitioner at home will often be confronted with imported cases the diagnosis and treatment of which require more than a nodding acquaintance with tropical medicine This seems to be well appreciated in Germany as shown by the continued output of large works on the subject the sale of which can scarcely be confined to residents in the Tropics

In the fourth volume of Professor Mense s well known textbook there are important articles on dysentery, abscess of the liver, leishmaniasis, fevers of short duration, and other subjects

Professor MANTEUFEL deals with the *cosmopolitan diseases* as they occur in the Tropics The article is a thoroughly practical one and deserves careful study Like others he has found that the Widal reaction in enteric fever is quite often negative in hot countries although the diagnosis is positively established by blood culture There is a very good section on the prophylaxis of this disease, and this is not a mere counsel of perfection The author gives striking figures showing the efficacy of anti typhoid vaccination in the German army during the war In the description of smallpox Professor MANTEUFEL refers to the frequency of more than one attack, and to the fact that pock-marked persons can be vaccinated successfully more often in the Tropics than in temperate climates this must be the experience of all who have to vaccinate large bodies of men In discussing the differential diagnosis of syphilis and yaws the writer mentions the dermatrope and neurotrope varieties of syphilis of LEVADITI When inoculated into animals the latter produces a more superficial ulcer than the former, this reminds one of the difference between the primary affections of framboesia and syphilis It might account also, to some extent, for the relative infrequency of tabes and general paralysis among the natives of the Tropics There is a useful bibliography, that is by no means confined to German publications

The various forms of *dysentery* are described at length by Professor RUGE. He remarks on the difficulty of isolating dysentery bacilli from other than perfectly fresh stools, and he considers that this may help to explain the numerous bacteria that were supposed to be the causal organisms of bacillary dysentery during the war; this seems to have been particularly the case in the German army. He quotes GAERTNER'S opinion that probably the infective agent of bacillary dysentery is unknown, and that it is perhaps ultramicroscopic. The sections on bacteriology, epidemiology and pathology are very thorough, and there is a good account of the symptoms, especially those of mild attacks. Treatment is rather inadequately described, and surely it is unnecessary nowadays to refer to a case of DAVIDSON'S (published in 1893) to emphasize the necessity of seeing the stools before making a diagnosis of dysentery. Professor RUGE quotes an interesting account of the almost incredible self-restraint of the German troops in East Africa: rather than drink unboiled water, the men quenched their thirst with the blood of wild animals, and even with their own urine!

The section on the epidemiology of amoebic dysentery shows how imperfect our knowledge still is of the life history of the entamoeba. The pathology of the disease is well described and most people will agree with the author that there is no invariable and definite distinction in the character of the stools as observed by the naked eye, or in the clinical symptoms of bacillary and amoebic dysentery. *Entamoeba hartmanni* Prowazek is still figured as a distinct species; according to DOBELL, this is certainly for the most part *E. histolytica*, and partly *E. coli*.

Professor Juliano MOREIRA, of Rio de Janeiro, gives a brief survey of *tropical nervous diseases* and intoxications, which are almost the same as those of other climates.

There is an excellent article on *verruga peruviana* by Professor H. da ROCHA-LIMA; it contains a long and critical account of the etiology, with good descriptions and coloured illustrations of *Bartonella bacilliformis*, and of the intra cellular bodies that have been found in verruga nodules. Although he is inclined to think that insect carriage is probable, he contents himself with a statement of the claims for the transmission by *Phlebotomus verrucarum*.

Professor Georg STICKER'S contribution on the *tropical fevers of short duration* is a very careful comparative study of this difficult subject. He points out very clearly the clinical differences between dengue and sandfly-fever; and says, very rightly, that, until the causal agent, or agents, have been demonstrated, it is impossible to come to a conclusive decision as to the identity or otherwise of the two diseases. Weil's disease is well considered from all aspects.

The article on *tropical liver-abscess* is by Professor Karl JUSTI; the description and illustrations of the histology of amoebic abscess of the liver are extremely good, and the choice of operation is discussed in a sound surgical spirit.

Dr. Upendranath BRAHMACHARI'S account of *kala azar* appears in the form of a translation into German by Professor Mense. The clinical symptoms are lucidly described, and there is a full and impartial discussion of the theories of transmission by the bed-bug, the flea, mosquitoes and sandflies, and of other suggested sources of infection. The question of the relationship of the herpetomonas infections of insects to leishmaniasis is also considered.

This very instructive and comprehensive volume will undoubtedly enhance the good reputation of former editions of this work. It is well produced and well illustrated, but the price is decidedly high.

H. J. Walton.

BUREAU OF HYGIENE AND TROPICAL DISEASES.

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MEDICAL ENTOMOLOGY: A RETROSPECT 1923-1925.

By Lt.-Col. A. Alcock, C.I.E., M.B., LL.D., F.R.S., I.M.S. (retd).

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The last Retrospect of this subject appeared in this *Bulletin* in April 1923 (Vol 20, p. 265) and included among its principal items reviews of observations on the breeding-places of Anopheles as influenced by the "composition" of the water; on the disappearance of malaria without concurrent disappearance of Anopheles; on tsetse-fly control through action on the general environment; and on specific differences between rat-fleas of the genus *Xenopsylla* in respect of the transmission of plague; and a note on the history and phylogeny of the Linguatulida (or Pentastomida).

In the present Retrospect publications received during the three years 1923-1925 are included; its first nine sections deal with subjects of wide general interest and importance; its following eight sections with matters of minor or more esoteric interest, some of which may be rather in the nature of caviare to the general.

The study of the environment, and particularly of the organic environment, as a necessary preliminary to the attempt to control noxious "wild" insects, such as tsetseflies and most Anopheles mosquitoes, is now being generally recognised by entomologists who work in co-operation with the sanitary authority. Old-fashioned naturalists, who were brought up on Darwin's "Origin of Species," have always looked askance at schemes for exterminating "wild" enemies of mankind in their natural environment—"wild" as distinguished from true parasites, like bugs and lice, whose environment is provided by the host itself—by crude direct attack, and have recommended the study of the third chapter of that wonderful book—the chapter on the "Struggle for Existence"—as a prologue to the study of entomology in its sanitary application to backward countries. Even the mediaeval authorities of continental Europe instinctively realized, in their procedure against noxious animals, a difference in principle between the domestic sort and the wild sort: the former were dealt with by the criminal courts, and their punishment was death; the latter came under the jurisdiction of the ecclesiastical courts, and their punishment was excommunication.

1. *Tsetse-flies.*—Certainly in the case of tsetse-flies the present tendency of protective measures seems to be to "excommunicate" the insect by operations upon the environment which at present it shares with the African native. One of the most vigorous exponents of

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this line of action is SWYNNERTON (1923, 1925), whose argument is none the worse for being based on personal experience of the African jungle, rather than on study of the "Origin of Species" or of accounts of mediaeval proceedings in ecclesiastical courts. Outside the necessary study of entomology SWYNNERTON's policy is founded on knowledge of the organic environment. Broadly speaking, its object is to make use of local agencies and resources in "excommunicating" the fly from the vicinity of villages; but to organize resources under European supervision. The natives are to be taught their own self-interest in the matter, and to be taught somewhat after the manner of Mr. Squeers, who, it will be remembered, insisted on "window" as an object to be cleaned by the pupil rather than as a word to be properly pronounced. And the lessons from the teacher should be, wisely planned settlement in large villages; husbandry rather than hunting, since hunting scatters the game, and with it the fly; periodic clearing and burning of jungle growth and of jungle around the settlement, this methodical clearing always to be a little in advance of the actual requirements of agriculture; clearing and perhaps stocking of barriers beyond the settlement. SWYNNERTON naturally does not ignore subsidiary means of destroying the fly; but the main object is to create and maintain an unsuitable environment.

A paper by FULLER (1923) dealing with the disappearance of tsetse-fly from the Transvaal from the historical standpoint and independent of any uniform settlement by Europeans suggests the influence of "floral-faunal combinations"—in other words changes in the organic environment. CURSON (1924), although he states that in Zululand European settlement has not tended to upset *G. pallidipes*, gives facts that are quite concordant with SWYNNERTON'S arguments, since they show that the European farmers by leaving the riparian fringes of jungle to nature, by discouraging veld fires, and by preserving and planting shade, maintain a suitable environment for the fly. YOUNG (1925) shows how sudden seasonal extremes in the volume of a tropical river (the Volta) must influence the volume and the spread of the fly. Among subsidiary measures for controlling Glossina must be mentioned LAMBORN'S (1925) well executed experiment with the Chalcidid parasite *Syntomosphorum glossinae*. The experiment, which was on a large scale, has an encouraging aspect, but must, of course, be repeated several times before any certain conclusions can be reached, since all the conditions of the experiment are not under the observer's control. The "experiments" of JACK (1923) in Rhodesia on control of tsetse-fly by destruction of game are not scientific experiments: occasional brief visits, during the course of four years, to a tsetse-infested tract, where during those four years the destruction of game had been carried on, appear to have convinced this observer not merely that the number of fly was diminished (which is not the whole point), but that the diminution was due to the destruction of the game. A long paper by ROUBAUD (1920) on the fly in French West Africa is, like all this author's papers, well worth reading, but the arguments on the protective influence of particular domestic animals are, as in the similar case of Anopheles, rather too absolute. Attention again may be drawn to the reports of the thorough survey of tsetse-flies and their activities in Nigeria by JOHNSON & LLOYD (1921, 1923, 1924).

2. *Anopheles.*—In the control of Anopheles the study of the quality of the watery medium of the larvae has recently come in for a good deal

of careful attention. This also may be regarded as a subtle aspect of the organic environment; since (within the normal limitations of animal life) it can hardly be supposed that small variations in the physical and chemical characters of the water act directly and wholly upon the larvae; it is much more probable that they act upon the microcosmic nutritional environment—upon the microscopic elements of that vegetable pabulum upon which the whole animal world is ultimately dependent. Malcolm WATSON, who drew attention to this subject many years ago, has again (1921) insisted on its practical interest. That it has a real practical interest in tropical rural areas must be obvious to all who have observed the results of trying to breed Anopheles larvae, in bulk, in a laboratory where daily supplies of their own natural water are not obtainable. That the frequency of failure is not due to decomposition going on in the water is shown by the observations of HAROLD (1923), who bred *A. maculipennis* in water that stank. That failure is due to starvation and not to the obvious state of the water is the inference from the experience of that accomplished naturalist W. A. LAMBORN, who informed the reviewer that in Malaya he could rear every species of Anopheles with the one proviso that the larvae were supplied with the common green Eugloena. BOYD also (1926) has indicated the facilities with which Anopheles larvae are reared when supplied with yeast. RUDOLFS (1924) also, who observed that water from claypits, containing high amounts of aluminum and iron sulphates, is inhibitive, concludes that it is the food of the larvae that is affected by the chemical composition of the water. In the search for some overmastering influence upon the natural conditions of life for Anopheles larvae MACGREGOR (1921, 1924) has been attending to the pH reaction of the water. CABALLERO seems to have been too hasty in his conclusion that the cosmopolitan water-weeds of the genus Chara possess this interdictive influence, since numerous observers in various parts of the world find Chara and Anopheles larvae happily associated—see in particular the papers of FISHER (1922), HACKER (1922), MACGREGOR (1924), and BARBER (1924). From BARBER'S careful observations with *Chara robbinsii*, in Louisiana, it appears that this species grows in thick mats in stagnant waters where larvae of the local species of Anopheles are extremely plentiful. BARBER'S laboratory experiments indicate the narrow limitations of the Chara doctrine; although in the laboratory the larvae did not thrive along with entirely fresh green *Chara robbinsii*, they flourished in its face if they were supplied with food, even if that food were finely-ground or rotting Chara. Another plant recently reported by WEED (1924) to have a deterrent effect upon Anopheles breeding is the ubiquitous water-hyacinth; here the explanation is that it gives specially - good harbourage to the small Entomostraca, which feed on the eggs and small larvae. Still another kind of plant that has been fetched into the lime-light is the modest bladder-wort, Utricularia, the bladder-like air-floats of which, as everyone knows, entrap and digest insects; BRUMPT (1925) and LANGERON (1925) seem to think that even this humble aid is not to be despised in the struggle against Anopheles.

The healthy persistence of species of Anopheles known to be susceptible to malaria in countries where endemic malaria—once extremely common—has practically disappeared is a good example of the "excommunication" of a noxious insect from human intercourse by the creation of a sanitary environment for man. ROUBAUD explained this anophelism sans malaria as a change not only in the habits, but also in the structure of the maxillae of the female Anopheles, due to the increase of stalled cattle; but the experiments of Bull & King (1923), Bull & Root (1923), Barber & Reynolds (1924) and Barber & Hayne (1924*a*), to name only these, do not support Roubaud's contention that the female Anopheles has a strongly marked special predilection for domestic animals. The reviewer's own observations (1925) of a well-spaced and well-housed population of a well-drained and well-farmed English district, from which endemic malaria has recently disappeared although Anopheles continues to thrive there, have led him to the conclusion that the Anopheles has been driven from human dwellings there by a modern sanitary environment, but still persists in large numbers outside that environment because there are plenty of farm animals to feed upon. The observations of Necheles (1925) that it is atmospheric moisture that most influences the survival of Anopheles when they shelter in houses rather countenances this opinion. Falleroni also (1924), though he believes that domestic animals have an actual protective influence against Anopheles, emphasizes the results of all that is implied in good farming. Before leaving the subject of Anopheles attention is due to experimental observations of Barber & Hayne (1924*b*), which are of general interest, on the dispersal and powers of flight of *A. crucians* and *quadrimaculatus*. In respect of flight also Fisher (1922) has noted distances of 2 miles and more, in Panama; and Kligler (1924), in Palestine, of more than 3 miles. A few remarks may also be made on the strange breeding-places of mosquitoes (including two species of Anopheles) in the crowns of cocoanut palms, described by Haworth (1924): but that that author is confident in the truthfulness and trustiness of his native collectors the association of a varied aquatic fauna with these mosquito larvae would be regarded with mistrust. Workers wishing to breed successive generations of Anopheles in the laboratory should consult the papers of Harold (1923) and Martini (1925). Christophers' (1924) catalogue of the Anophelini of the world is a valuable work of reference.

3. *Phlebotomus.*—The determination of the pathogenous capacity of certain common species of Phlebotomus has become more exact. The plenary observations of Whittingham & Rook (1923) of the life-history of *P. papatasii* show up this species as truly a domestic pest, since it breeds among buildings and is incapable of sustained flight; and an experiment by Adler & Theodor (1925) goes almost to the point of proof—foreshadowed in 1921 by Sergent and his colleagues—that *Leishmania tropica* can be transmitted by it. As regards the common Indian species *P. argentipes*, the discovery that the parasite of kala azar multiplies freely in its gut and pharynx has brought it into very strong suspicion as the long-sought carrier of that disease (see Christophers *et al.* 1925). Lloyd, Napier, and Smith (1925) have shown that this species breeds around insanitary Indian dwelling-places and attacks man only when cows are not procurable. (Sinton (1925) has explained that the species described by him by the name of *P. annandalii* is identical with *P. argentipes*).

4. *Other Diptera.*—The discovery by Blacklock (1926) in W. Africa of the development of *Oncocerca volvulus* in *Simulium damnosum* must be signalized as one of the important items of the present retrospect, as must also the fine critical account by the same author and Thompson

(1923) of the life-history of the tumbu-fly (*Cordylobia anthropophaga*). JOHNSTON (1922) has produced a useful paper on the biology of the house-fly in Australia, and DUNN (1923) on the same subject in Panama. In Brisbane, according to JOHNSTON, the house-fly completes its development from egg to adult, in summer, in 7 to 8 days. In Panama DUNN has observed pairing of house-flies to take place within 24 hours of emergence from the pupal case, a single pairing to be sufficient to fertilize the female insect for life, and also that a single female may give issue to 21 batches of eggs—to a total sum of 2,387—in the course of 31 days. GLASER (1923), in strong contrast with most other observers, states as the result of his experiments that newly-emerged (surface-sterilized) flies contained within them bacteria that must have been ingested in the larva stage. Many cases of myiasis have been reported during the last three years. In one case of cutaneous myiasis described by PATTON (1925) the maggots were those of the common house-fly. DESOIL & DELHAYE (1922) and DESOIL (1924) conclude as the result of their experiments that intestinal myiasis by Muscids such as Calliphora is not likely to be due to ingestion of the eggs, since neither eggs nor young maggots can stand the rough usage they receive in the alimentary canal.

5. *Fleas.*—HIRST (1924) has published the results of experiments confirming his earlier conclusions upon the relative incompetence of *Xenopsylla astia*, in comparison with *X. cheopis*, to spread the infection of plague. Under laboratory conditions where transmission by *X. cheopis* was easy he could not effect a single transmission by *X. astia*. He attributes the dangerous efficiency of *X. cheopis*, as a transmitter, to the facts that it bites more persistently and survives longer when "blocked," and as a disseminator, to the additional fact that its hardy and independent larvae are easily transported in the course of trade. CRAGG & SWAMINATH (1923) also have borne witness to the comparative inefficiency of *X. astia*; in their laboratory it did not live, unfed, longer than 24 hours and, moreover, was reluctant to bite man; even in a moist atmosphere it did not live long unfed. DELANOE (1925 *a*, *b*) has discovered *Pulex irritans* to be the predominant flea in Morocco; among its most liberal hosts are the jackal and the domestic pig. The same author (1922) extols the sheep with its greasy fleece as a flea-trap.

6. *Bed-bugs.*—The bed-bug theory of kala azar transmission seems to have died down; further experiments on a large scale, as by SHORTT & SWAMINATH (1925) and by NICOLLE & ANDERSON (1925), which may be regarded as decisive, have failed to elicit any evidence in its favour. DUNN (1924) has described in detail the life-history of *Cimex rotundatus*, which differs from that of *C. lectularius* only in the facts that the post-embryonic development is quicker and the adult life shorter, and that the female is more prolific—all of which illustrate the influence of tropical warmth and moisture on insect life.

7. *Lice.*—The ectoparasites of the tarbagan marmot (*Arctomys bobac*) have been studied by SAKNEV (1924) and the tarbagan-louse in particular by v. JETTMAR (1925), in connection with the spread of the plague bacillus among these marmots. The infectibility and the high infectivity of the specific louse of the marmot, a species of *Linognathus*, is demonstrated. This louse, of course, will bite other animals, in the laboratory, but will not attach itself to them.

8. *Insect Flagellates.*—BECKER (1923) has argued the extreme probability of all the 5 species of Herpetomonas, which have been

described from as many species of blowflies and flesh-flies, being identical with *H. muscae-domesticae.*

9. *Rickettsia in Insects and other Arthropods.*—Two useful papers for reference may be noted, one by HERTIG & WOLBACH (1924), the other by COWDRY (1923). The latter author (1925) has found these bodies in the gut and Malpighian tubules of a species of locust.

10. *Beetles.*—The small, active, Staphylinid beetle of the cosmopolitan genus *Paederus* have become almost notorious as causing by contact a painful dermatitis. BEQUAERT (1921) in Congoland and GORDON (1925) in West Africa have added to the list of noxious species of Paederus, and STRICKLAND (1924) in India has explained that the painful eruption of the skin known to Anglo-Indians as " spider-lick " is caused by *Paederus fuscipes.* LOIR & LEGANGNEUX (1922) have drawn attention to the symptoms—itch and irritation of the respiratory tract—produced by the hairs of Dermestes larvae in men handling stuff infested with that ubiquitous pest. FLETCHER (1924) has identified Scarabaeid beetles that in the plains of Lower Bengal and Ceylon find their way into the bowel of children ; he thinks they must creep in while the child is asleep.

11. *Caterpillars with venomous Hairs.*—Quite a lot of papers have been published on the acute dermatitis, attended sometimes with fever and nervous symptoms, caused by hairy caterpillars of certain moths. Most observers agree that the injury is inflicted not by the general hairy coat, but by hairs of a particular kind disposed in definite tufts ; but while some speak of hollow spines, others have carefully described hollow barbed hairs, inflated at base to contain a gland composed of one or two large cells—a true venom gland. The most valuable of recent papers are one by FOOT (1922) containing, besides descriptive matter, a list of families and genera of moths implicated, and two others by GILMER (1923) and by WADA (1925) that describe the venom-glands and venom as well as the hairs.

12. *Cockroaches.*—That furtive and obscure cosmopolite, the cockroach, has come in for a good deal of notice of late. The Trustees of the British Museum have published an " economic " pamphlet on the insect by LAING (1921). MACFIE (1922) has considered its capacity for spreading disease, finding that the bacilli of tubercle and leprosy and cysts and eggs of intestinal parasites of man can pass through its gut uninjured. GHOSH (1922) describes a new species of Balantidium from *Periplaneta americana.* TAKAHASHI (1924) gives details of the life-history of *Periplaneta americana* in the tropical climate of Formosa. GOODWIN (1925) states that in the moist atmosphere of a ship at sea sodium fluoride is useless against cockroaches. SAMBON (1924, 1925) on epidemiological grounds (which are notoriously treacherous unless the data are complete at all points and uniformly trustworthy) assigns to the cockroach (as being the intermediary host of the parasitic nematode worm, *Gongylonema neoplasticum,* shown by FIBIGER to be often an excitant of cancerous growths in the stomach of rats infected with that worm by feeding on infected cockroaches) a chief part in the spread of carcinoma among mankind.

13. *Spiders.*—The serious effect of the bite of *Lathrodectes mactans* have been described by BAERG (1923), and of "tarantula bite" [probably Lathrodectes] by CULPEPPER (1924.)

14. *Scorpions.*—The resistance offered by the domestic fowl to scorpion venom, and its voracity for scorpions, in Brazil, is noted by DIAS and others (1924), and the same remarkable appetite is mentioned in Morocco by MARCENAC (1925). FRETZ (1925), describing the effects of scorpion-sting, in Trinidad, mentions among them transient glycosuria. For immediate relief in cases of scorpion-sting SHARP (1924), who seems not to have realized that the venom of different species of scorpions may vary greatly in virulence, recommends an injection of novocain and adrenalin.

15. *Ticks.*—The spinous ear-tick, *Ornithodorus megninii*, which has been carried from America to Africa, is said by CURTIS (1923) to get into the human auditory meatus, sometimes. *O. talaje*, a transmitter of relapsing-fever in Tropical America, is stated by DUNN (1923) to have the habits of the bed-bug, and to be known locally as the "human tick." MCARTHUR (1923) and FERGUSON (1924) have written on tick-bite-paralysis; the former on the general subject, the latter on *Ixodes holocyclus* and fatalities following its bite in Australia.

16. *Mites.*—WALCH (1923), who considers the rat to be the natural source of the virus of Sumatran pseudotyphus, since in that animal its presence causes no "clinical" symptoms, regards his *Trombicula deliensis* as the intermediary between rats and man, and his *T. schuffneri* as a co-operant between human beings. He also (1924) describes and figures these and other species of Trombicula occurring in Sumatra. The source of certain food-mites found in urine of hospital patients, which attracted some attention in 1922, has been traced by MCKENZIE (1923) to the straw packing of glass used in the laboratory. In this connexion it may be mentioned that during the war a small outbreak of itch, coming within the experience of the reviewer, was tracked with pardonable incredulity to certain periscopes recently removed from their packing-case; sure enough, within the periscopes both Glycyphagus and the acarivorous Cheyletus were found alive.

17. *Insecticides.*—LECAILLON and AUDIGÉ (1921) recommend toluene for bugs, lice, and fleas; but it irritates the skin. GILMER'S (1922) trials of derris powder show it to be slower in action than pyrethrum but more persistent in the open. Calcium cyanide, a powder, is recommended by SULLIVAN (1924) for fleas; but the scattering of cyanide salts about houses is not a proceeding that the medical profession will approve. RIPLEY (1924) has some interesting remarks on sodium fluoride as an insecticide for domestic use; it is cheap and comparatively safe. For fine-spun detail on pyrethrum, see a paper by JUILLET & DIACONO (1925).

It would be unseemly and unnatural to turn from this retrospect of the living past and forget our recent mourning for those two gifted and single-minded medical entomologists, A. W. BACOT and F. W. CRAGG, who died—BACOT in Egypt in April 1922 and CRAGG in India in April 1924—when engaged in the field-study of the most dangerous of the insect-borne diseases. Both of these accomplished naturalists and devoted men sacrificed themselves in the study of typhus, and both of them, about 18 months before their death, had already suffered in a field-study, BACOT of trench fever, and CRAGG of relapsing fever. GREENWOOD'S (1924) Life of Bacot has been noticed in this *Bulletin*; a memorial tribute to CRAGG appeared in the *Indian Journal of Medical Research* for the same year (1924).

REFERENCES *

*Unless otherwise stated references are to summaries in the *Tropical Diseases Bulletin.* Dates refer to the year of publication of the original papers

Adler & Theodor (1925), xxiii, 105
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——, —— (1924*b*), xxi, 430
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Blacklock (1926) *Ann Trop Med Parasitol*, xx, 1
—— & Thompson (1923), xxi, 150
Boyd (1926), *Bull Entom Res* xvi, 308
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Whittingham & Rook (1923), xxi, 433.
Young (1925), xxiii, 290

LEPROSY.

KOPSTEIN (F.). **The Moluccas.**—*Meded. Dienst d. Volksgezondheid in Nederl.-Indië.* 1926. Pt. 1. pp. 1–78. With 28 figs. on 14 plates, 2 maps and 7 text figs. [3 refs.]. [Leprosy pp. 23-35.]

Leprosy is widely distributed in the Molucca islands, where the primitive tribes force the patients to build their own huts outside the village, but the more civilized ones take no precautions against infection; healthy children are often educated in houses of lepers, and the people live in damp dark huts. There is definite evidence of a great increase in the number of lepers in certain islands since 1901, when NEEB found them to number 89 or 2·5 per mille of the population while a recent careful inquiry revealed 163 lepers, or 5·9 per mille, almost double, in the same three islands. The total number in all the islands is now 433, only 84 of whom are in hospital, but the number is increasing. In Ambon there are 299, or 5·9 per mille, and in the capital the rate is no less than 12·5 per mille. In the islands the native Christians suffer four times as much as the Mohammedans, although no evidence of hiding cases among the latter was found, and the only difference noted between their villages was that the Christians alone kept dogs, but the author attributes the difference to close intermarriage among the Christians, who do not travel from their villages, and he is inclined to think that heredity plays an important part because children often fall victims to the disease. [He does not appear to have taken into account the much greater susceptibility of children to infection]. The numbers differ much in the various islands, no lepers having been found in Buru with 4,000 people. He considers that the only practical method of dealing with the disease is by compulsory isolation; he thinks there would be little difficulty in carrying it out, and he quotes evidence to show that formerly compulsory segregation considerably reduced the number of lepers, but its relaxation in 1866, in consequence of medical opinion then favouring the hereditary view of its causation (chiefly as the result of the report at that time of a Committee of the Royal College of Physicians of London), had "a most deplorable result" in a great increase of the disease. In 1892 the Government decided that help should be given only when private initiative proved insufficient, and a Society for fighting Leprosy in the Moluccas has now provided an asylum in Amboina with Government help. This now has a capacity for 100-150 patients, and is about to be enlarged to hold 500, when an ordinance will be published compelling the lepers to be interned. "The next few years will be a turning-point in the history of leprosy in the Moluccas."

L. Rogers.

PULIDO (A.). Note sur la lèpre en Espagne. [**Leprosy in Spain.**] —*Bull. Office Internat. d'Hyg. Publique.* 1926. Jan. Vol. 18. No. 1. pp. 54-56.

The chief centres of the disease are in the Levant provinces, Andalusia, Galicia and the Canary Islands. The official statistics of 1914 gave 898 cases, including 82 in the Canaries, and a recent inspection showed 579, of whom 228 were isolated. Abundant legislation for its control exists, but the State does not provide sufficient funds, 100,000 pesetas being divided between the four leprosaria of Fontilles, in Alicante, La

Corogne, Grenada and the Canaries. Leprosy other than advanced nervous and mixed forms is amenable to treatment, and progressive amelioration up to cure is not rare with continued energetic treatment. When the general practitioner can recognize the early stages leprosy will be stamped out, compulsory segregation being enforced under the best conditions of sanitation and comfort.

L. R.

MATARANGAS (G.). La lèpre en Grèce. [**Leprosy in Greece.**]—*Bull. Office Internat. d'Hyg. Publique.* 1926. Jan. Vol. 18. No. 1. p. 57.

In 1924 310 lepers were known in Greece, including 200 in Crete, 28 in Thassos, 25 in Chio, 24 in Samos, and fewer elsewhere. Compulsory notification and isolation is enforced in four institutions respectively in Spina-Longa in Crete, Chio, Samos, and Mont-Athos, work on cultivation being arranged for. The immigration of lepers is forbidden and they are not admitted to schools. In Chio MUIR'S E.C.C.O. ethyl ester hydnocapate has been in use, and the results have been more marked and lasting than with chaulmoogra oil.

L. R.

ABBATUCCI (S.). La lèpre à Madagascar. [**Leprosy in Madagascar.**] —*Presse Méd.* 1926. Apr. 14. Vol. 34. No. 30. p. 476. With 1 map in text.

There are now 2,306 lepers isolated, but the total number is believed to be about 6,000. The disease is dealt with under an ordinance of 23rd February, 1911, providing for home isolation only in rare cases and the provision of leprosaria for 3,930, which will be increased to nearly double that number before long. Infants borne to lepers are taken care of for five years in a special institution, and if found to be healthy are then entrusted to healthy relatives; several years' experience shows that they remain well. No treatment has been of benefit except ethyl esters of chaulmoogra oil, which has produced improvement, but the trials are too recent to allow of a final opinion on their value.

L. R.

WOLFF (J. W.) Het lepra-probleem in Suriname. [**The Leprosy Problem in Surinam.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 5. pp. 572-582. [2 refs.]

Wolff gives an account of the history of leprosy in Surinam, which apparently was not endemic in South America but imported with negro slaves about the middle of the 17th century. Regulations intended to combat its spread have never been sufficiently enforced, with the result that leprosy is still prevalent (the author estimates the sickness rate to be 7 per 1,000) and constitutes a real menace. Possible reasons for this neglect are (1) the fact that the population is not at all afraid of contagion, but has superstitious ideas about the causation of leprosy, (2) the numerous family relations, a sequel of intermarriage of the colonist families, by which many lepers are related to some government officer who may interfere with the activity of the authorities.

Wolff gives an account of the measures recently introduced for the registration of lepers. He urges the necessity of leper colonies along the lines of the village system, thus encouraging voluntary segregation and early separation of new born children from their leprous parents.

W. J. Bais.

RANGEL (Mario). Notas sobre a prophylaxia e a therapeutica da lepra. [**Prophylaxis and Treatment of Leprosy.**]—*Rev. Med. Cirurg. do Brasil.* 1926. Mar. Vol. 34. No. 3. pp. 113-126.

This interesting paper gives an account of the prevalence of leprosy in Brazil in general and of two or three districts in particular. The previous estimate of 12,000 lepers is considered an understatement, the total being probably in the neighbourhood of 20,000. In the State of Pará some not very reliable statistics have given 3,000 infected. The author is strongly against mere isolation as savouring too much of incarceration, but speaks highly of the " colony " system, especially the " model farm-colony " in S. Antonio do Prata, in Pará, contrasting this with the bad conditions in S. Paulo and Minas.

The latter part of the paper deals briefly with the general question of leprosy and its treatment by (1) living agents, such as bees, the patient being subjected to the stinging of 20 to 200 bees at a time . from this appreciable improvement has been reported. (2) Physical agents, such as X-rays and carbonic acid snow, with good results at the end of a year's treatment. (3) Biological products—leproline, nastine—with inconclusive results. (4) Chemical, as eparseno and chaulmoogra oil or its derivatives.

Trial is also being made of an Italian preparation, Antilebrina, and of an antilepra vaccine, but they have not yet been sufficiently employed to warrant a report.

H. Harold Scott.

PUPO (Aguiar). O Leprosario de Santo Angelo. [**The Santo Angelo Leprosarium.**]—*Ann. Paulist. Med. e Cirurg.* 1926. Jan. Year 14. Vol. 17. No. 1. pp. 12-18.

The author deals with objections brought against the leper asylum of S. Angelo. The chief of these were :—(1) The proximity of the leprosarium to the capital. It is, however, 40 kilometres distant, affords a standing testimony of its value, is readily accessible to visits by medical men and relatives of the patients, and its arrangements are such that other sufferers are attracted to present themselves for treatment. (2) The discharge of sewage from the leprosarium into the Tieté is a danger to the town below. It is held that this river receives the sewage of the whole city of S. Paulo and that biological treatment renders it innocuous. (3) That it is inadequate for the needs of the district. This can be remedied by the erection of others.

H. Harold Scott.

HUDELLET (G.) & MOREAU (G.). Contribution au diagnostic précoce de la lèpre par les rayons X. [**Early Diagnosis of Leprosy by X Rays.**]—*Bull. Soc. Path. Exot.* 1925. Nov. 11. Vol. 18. No. 9. pp. 757-758. With 2 figs. on 1 plate.

An early case of leprosy is reported in which X-rays revealed in the bones of the hand light areas of partial decalcification of diagnostic value.

L. R.

GOMES (Jose Maria). A lepra e os erros de diagnostico. [**Mistakes in the Diagnosis of Leprosy.**] Trabalho lido na Sociedade de Biologia e Hygiene de S. Paulo, em 9 de Dezembro de 1925. —15 pp. 1926. Instituto de Hygiene de São Paulo.

An interesting paper showing that leprosy is often overlooked, particularly in the early stages, when cure may be more hopefully expected, and that erroneous diagnosis is sometimes due to insufficient examination, sometimes to unwillingness to stamp the patient as leprous.

These " slips " are more frequent according to the social status of the patients—a significant fact. Twenty cases are briefly recorded, some of which may be mentioned. A leprotic macula is diagnosed as gouty eczema, or urticaria from intestinal toxaemia ; perforating ulcer of the foot as an infected corn ; many are regarded as syphilitic. The author lays stress on the presence of general or localized pains of a rheumatic character as an early symptom in many cases, and if these pains do not soon disappear the medical attendant should be on his guard and examine carefully for maculae or anaesthetic patches and the nasal mucus for bacteria.

H. Harold Scott.

UCHIDA (Shigeo). Die statistische Studie der Leprakranken in der Gegend von Okayama-Präfektur. [**Statistical Study of Leprosy in the Okayama Prefecture.**]—*Japan. Jl. Dermat. & Urol.* 1926, Jan. Vol. 26. No. 1. German summary p. 2. [In Japanese pp. 34-48. With 1 chart in text.]

At the Okayama skin diseases clinic from 1914-1924 320 lepers were seen, or 0·78 per cent. of the whole number of cases. Males 70·3 per cent., women 29·7 per cent. Lepra maculosa 50·7 per cent., nerve 29·7 per cent., nodular 13·4 per cent., and mixed 5·9 per cent. ; most frequent age 20-30 and very few children under 10 years.

L. R.

ROGERS (Leonard). **Resemblances between Leprosy and Tuberculosis.** —*Brit. Jl. Tuberculosis.* 1925. Apr. Vol. 19. No. 2. pp. 69-73. [8 refs.]

It is well that the close resemblances between tuberculosis and leprosy should be emphasized by one, like Sir Leonard Rogers, whose life has been spent in a country where both diseases are endemic and where opportunities for comparing them are frequent. Tuberculosis is, indeed, the "leprosy" of our civilization, and the student of tuberculosis has much to learn by a study of the decline and fall of leprosy in Europe, and its persistence to this day in more primitive countries. Sir Leonard's paper must be consulted in the original to appreciate the skill with which the numerous analogies between the two diseases are brought to light. Perhaps the most important point is the emphasis laid upon close personal contact in over-crowded houses in the transmission of infection in both diseases and the susceptibility of the early years of life. Stress, too, is laid upon the need to differentiate between the highly infective " open " case of phthisis or the ulcerating case of nodular leprosy on the one hand and the closed tuberculosis or the anaesthetic type of leprosy on the other. The indiscriminate branding of all phthisics and all lepers as highly dangerous has led to much unnecessary hardship and suffering, and to much waste of energy time and accommodation space. The new analogies brought to light by the work of Sir Leonard Rogers in the development of the treatment of both leprosy and tuberculosis by the morrhuates and gynocardates constitute, in themselves, a vast field for future study and research.

S. L. Cummins.

KÄYSER (J. D.) Beschouwingen naar aanleiding van het Verslag van de IIIde Internationale Lepraconferentie, gehouden te Straatsburg van 28-29 Juli 1923. [**Considerations with regard to the Report of the IIIrd International Leprosy Conference, held at Strassburg, 28th-29th July 1923.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 6. pp. 716-750.

Käyser summarizes the contents of this report. He is disappointed in noticing that no great progress has been made since the previous conference at Bergen. He compares the leprosy campaign with the measures taken against tuberculosis and thinks that the former does not show favourably. He gives his opinion that in the cure of leprosy general treatment (especially hot baths) may be of distinctly helpful influence, a fact which is often neglected or forgotten. In regard to legislation he expresses his satisfaction about the more and more generally accepted opinion that compulsory isolation is of little importance in combating leprosy. More human ways of segregation and prevention of contagion are recommended by the Report.

W. J. Bais.

WADE (H. W.) **Notes on the Pathology of Leprosy.**—*Jl. Philippine Islands Med. Assoc.* 1926. Feb. Vol. 6. No 2. pp. 37-42. [9 refs.]

" In spite of the renewed interest in the leprosy problem aroused by increasing success in the treatment of this disease, comparatively little attention is being paid to its pathology," certain salient points in which are discussed in this paper. There is still a divergence of opinion in regard to the relation of the lepra bacilli to cells, one school holding that they are extracellular, situated in blood and lymph capillaries and in unlined lymph spaces, where a peculiar material accumulates around them to form the typical vacuolated appearance of leprotic lesions as held by UNNA ; while VIRCHOW and his followers maintained that the bacilli are inside large cells, apparently the large mononuclear wandering cell, where they multiply. The writer subscribes to the compromise view that the lepra cell predominates in the typical leproma, but the bacilli are also scattered in tissue spaces and capillaries, and may have originated from cells which have died and disappeared. Difficulties arise owing to the organisms easily losing their acid-fastness, but he has been able to develop a technique (details not stated) that demonstrates that the more sensitive, ? dead, bacilli may be present in large numbers, as well as the apparently younger, more resistant ones. The cutaneous type develops in persons with a low resistance to the organism, and the neural type in those with greater resistance, and in a large proportion of 500 autopsies on advanced cases " the cutaneous lesions have undergone retrogression as the result of treatment, or acquired immunity or complicating tuberculosis, which last curiously has this effect." [This is interesting in relation to ROGERS' view that the incidence of leprosy in Africa, Asia and Europe is inversely proportionate to the degree of tuberculization of the population.] The peripheral nerves are nearly always involved in cutaneous leprosy and evidence is always found post mortem of more extensive infiltration or subsequent fibrosis than was suspected clinically; some disturbance of sensation, however, is common early in the disease often as the earliest clinical evidence, and sooner or later degenerative changes occur in the nerve fibres due to the effect of toxins or pressure. Lymph node involvement is important and is thought by MARCHOUX, who found it in rat leprosy, to be possibly the site of infection in latent leprosy, and the organisms may also persist in the glands after they have disappeared from visible lesions; French colonial observers have found them by aspirating the inguinal glands in some apparently healthy contacts with lepers, and PINEDA at Culion aspirated in this way 53 ex-lepers about to be discharged with 9 per cent. positive results. The testis is the only other organ extensively and regularly involved, with loss of sexual power in advanced cases, but the ovary suffers very little, so females remain fecund. The bacilli may be found in nearly all the other organs of the body, but without producing important lesions. Infiltration of the nose and larynx is well known and most important for the dissemination of the bacilli, but these lesions are very rarely if ever primary ones. The gastro-intestinal tract is very infrequently involved and the mesenteric lymph glands only occasionally contain bacilli.

Nerve Leprosy.—True nerve leprosy presents a great contrast to the cutaneous form, as the disease begins in and remains limited to the nerves and is comparatively very inactive in type, no case having been found post mortem to be in a progressive stage; the bacilli are possibly confined exclusively to the nerves at the time of death, although the patients commonly show clear evidence of pre-existing lesions of the skin and other organs. The trophic ulcers rarely contain the bacilli, so are infinitely less infective than ulcerated skin nodules. In old secondary nerve cases in particular there is often found a high degree of arterio-, and particularly phlebo-sclerosis in the vessels of the limbs, and local degeneration of the veins is not uncommon, but the large vessels such as the aorta are rarely affected.

The bacillus is extremely refractory to cultivation and animal inoculation, and serologically cannot be differentiated from other acid-fast organisms, and it has a very low degree of toxicity, the lepra reactions and fever being apparently "due to some peculiar temporary upset in the balance between organism and host, probably anaphylactic in nature, and not to bacterial toxins in the strict sense." The evidence regarding the Wassermann reaction is conflicting, but 500 tests at Culion showed that with a carefully adjusted technique positive reactions were not obtained unless some complicating disease such as yaws (and presumably syphilis) was present, except that a certain number of leprosy cases give weakly positive results. There may also be a marked globulin excess, which becomes extreme in cases of lepra reaction.

L. R.

PINEDA (Eloy V.). **Leprosy as a Cause of Death.**—*Jl. Philippine Islands Med. Assoc.* 1925. Dec. Vol. 5. No. 12. pp. 360-365. [2 refs.]

Since the previous report of 200 autopsies with only 7 cases of death directly attributed to leprosy 200 more have been performed with a total of 18 or 3·6 per cent. of the 500 cases, 12 ascribed to leprous cachexia, 4 to lepra reaction, 1 to leprotic acute exfoliative dermatitis and one to laryngeal obstruction. The secondary causes of death are mostly tuberculosis and nephritis. In cases of fatal lepra fever or reaction the bacilli may be found in the circulation, and anaemia, nephritis and exhaustion may result.

L. R.

SOLIS (F.) & WADE (H. W.). **Bacteriological Findings in Children of Lepers, with Special Reference to Nasal Lesions.**—*Jl. Philippine Islands Med. Assoc.* 1925. Dec. Vol. 5. No. 12. pp. 365-369. [11 refs.]

" A firmly entrenched error in connection with leprosy is the belief that the nasal mucosa is one of the important sites of the primary lesion of this disease, if not the most important one." This idea persists in spite of repeated findings to the contrary. The facts are that nasal lesions are far from constant even in well-established cases, and are infrequent without definite lesions elsewhere, and that the findings of a few acid-fast bacilli in nasal material not very typical in appearance and arrangement is not a sufficient basis, in the absence of other evidence, for a diagnosis of leprosy. JOHNSTON in over one thousand examinations in the Philippines obtained positive results in less than 50 per cent. of well established cases, and in only 13 per cent. of nerve forms, and concluded that nasal acid-fast bacilli were not certain evidence of leprosy, and other workers there and in Hawaii found nasal examinations of little or no value in early diagnosis of leprosy. More recently 250 children of leper parents in Culion, among whom positive cases were arising from time to time, have been examined after living with their leper parents; all were over three years of age, and included 127 clinically negative, 87 suspicious and 36 clinically positive, the skin lesions also being examined microscopically when present. In not a single instance were nasal smears positive in the absence of positive skin lesions, confirming previous findings in these children.

Of the 250 children 35, or 14 per cent., gave positive results, the percentage increasing with the age of the subjects from 7·1 per cent. in those 3 to 6 years old to 20 per cent. at 12 to 15 years. Further, 60 per cent. of the positive cases were found so for the skin only. " These findings are very striking. They strongly indicate that nasal lesions are entirely secondary manifestations in young children."

L. R.

REENSTIERNA (J.). Reproduction expérimentale de la lèpre chez les singes inférieurs. [**Experimental Reproduction of Leprosy in Java Monkeys.**]—*Ann. Inst. Pasteur.* 1926. Vol. 40. No. 1. pp. 78-88. With 7 figs. on 3 plates. [4 refs.]

Bonnet monkeys, *Macacus sinicus* and *rhesus*, have been inoculated with a fresh emulsion of leprous nodules rich in bacilli from an active nodular leprosy in subjects free from clinical tuberculosis, guineapigs being inoculated at the same time with negative results to exclude tuberculosis. All traces of the injections disappeared in three days, but after an incubation of 37 to 45 days 3 *M. sinicus* and 4 *M. rhesus* developed nodules gradually increasing to the size of a pea or a prune and persisting for from 40 to 62 days. One nodule remained after seven months, and they were clinically and microscopically similar to human lesions as proved by examinations of removed pieces, which showed typical large vacuolated cells containing acid-fast bacilli in bundles. Two of the *M. sinicus* were reinoculated 6 and 7 months after the complete cure of the first-produced lesions, and both developed nodules after shortened incubation periods of 19 and 22 days respectively, which persisted for 40 and 45 days. A *M. rhesus* inoculated with emulsions of three of the other monkey's nodules gave a negative result, and all the removed monkey's nodules were injected into guineapigs with negative results, showing that the lesions were not tubercular in origin. He therefore concludes that he has succeeded in reproducing in non-anthropoid apes localized leprosy lesions.

L. R.

OLIVER (Jean). **The Origin of the Lepra Cell.**—*Jl. Experim. Med.* 1926. Feb. 1. Vol 43. No. 2. Pt. 1. pp. 233-239. With 2 figs. on 1 plate. [14 refs.]

Rats inoculated intraperitoneally with rat leprosy 10 and 11 months previously were given subcutaneous injections of 2 cc. of a 1 per cent. aqueous trypanblue solution repeated twice at six day intervals; this produced vital staining with dark granules of the histiocyte cells only. At the end of the experiment they were killed and fixed in toto in 10 per cent. formalin, and the leprous lesions in the subcutaneous tissues and small nodules in the liver and lungs of one animal were examined histologically. It was thus found that round the leprous tissue there was an accumulation of the histiocyte or reticulo-endothelial cells deeply stained, and all the stages of the gradual transformation of these cells into typical large vacuolated cells crammed with lepra bacilli, but containing no vital staining, could be traced; the blue granules gradually disappeared in proportion as the transformation took place. In a similar way it had previously been found by other observers that the giant cells of tubercle are formed mainly from the same type of cell.

L. R.

SECHI (Elio). Le reazioni di Wassermann e di Sachs-Georgi nella lepra. [**The Wassermann and Sachs-Georgi Reactions in Leprosy.**] —*Sperimentale.* 1925. Vol. 79. No. 6. pp. 1069-1074. [8 refs.]

The author tested the sera from 11 cases of leprosy—4 nodular, 2 anaesthetic and 5 mixed—by the Wassermann, the Sachs-Georgi, and the Sachs-Wassermann reactions (the Gaethgens and Salvioli technique). The last two were carried out with both active and inactivated sera. In one case syphilis could not be excluded, and this one gave positive results throughout. In the cases of the remaining ten, the results of the Sachs-Georgi reaction were, with active sera: Seven proved negative and 3 doubtful (one of the anaesthetic and 2 nodular). With inactivated sera the results were almost identical, the only difference being that the doubtful anaesthetic case now proved definitely negative. The Sachs-Wassermann gave negative results in all ten with active sera and inactivated. The Wassermann itself proved positive in 3 nodular, 3 mixed and 1 anaesthetic and negative with 1 of each type.

H. Harold Scott.

VAN DEN BRANDEN (F.). La réaction de Bordet-Wassermann dans la lèpre. [**The Bordet-Wassermann Reaction in Leprosy.**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 171-174.

Of 24 lepers 14 gave negative, 5 positive reactions and 1 was anticomplimentary. Of the remaining 4, 3 were positive at first, but became negative after treatment with eparseno, and in the fourth reaction had become slight.

L. R.

SABRAZÈS (J.). Léprose massive de la rate et du foie ; pas de bacilles de Hansen dans la bile. [**Massive Leprosy of the Spleen and Liver: Lepra Bacilli Absent from the Bile.**]—*C. R. Soc. Biol.* 1925. Dec. 18. Vol. 93. No. 37. pp. 1526-1528.

At an autopsy on a leper covered with ulcerated nodules sections of the liver and spleen showed very dense masses of lepra bacilli, the kidneys and lungs contained much fewer and the cerebro-spinal system none. Repeated examination of the bile, however, revealed no bacilli, although in the liver itself there was a great accumulation of macrophages of the type of Kuppfer's cells filled with lepra bacilli. Similar changes were found in the spleen in the reticulo-endothelial cells of the pulp and sinuses, but very few in the Malphigian corpuscles, thus differing considerably from the lesions produced by tuberculosis.

L. R.

GILBERT (A.), TZANCK (A.) & CABANIS. De l'accélération de la sédimentation sanguine au cours de la lèpre. [**Acceleration of Blood Sedimentation in Course of Leprosy.**]—*C. R. Soc. Biol.* 1926. Apr. 9. Vol. 94. No. 12. pp. 837-839. With 2 text figs. [1 ref.]

The authors find that the rapidity of sedimentation of the blood is increased in the course of leprosy, especially during the active progress of the disease.

L. R.

KEW BULLETIN OF MISCELLANEOUS INFORMATION. Roy. Botanic Gardens. 1926. No. 1. pp. 17-23. With 2 plates.—**The Treatment of Leprosy by Vegetable Oils.**

This informative article has been prepared by Dr. T. A. HENRY and begins with references to the early work of Sir David PRAIN in 1901 in discovering that chaulmoogra oil is derived from the *Taraktogenos Kurzii*, and not from *Gynocardia odorata* as formerly thought, and of F. B. POWER and others in 1904 in showing that this oil and the Hydnocarpus oils contain chaulmoogric and hydnocarpic acids with a cyclic structure and optical activity, and the preparation of "gynocardic acid" and "sodium gynocardate," really a chaulmoogra oil soap. It continues: "The first real advance on the medical side was made by Sir Leonard Rogers, who began work in India about 1915. He used at first sodium salts of the total fatty acids of both chaulmoogra and hydnocarpus (*H. wightiana*) oils, but eventually got the best results with sodium salts of fractions of the fatty acids rich in hydnocarpic acid." The introduction of ethyl esters of chaulmoogric and hydnocarpic acids by DEAN & HOLLMAN followed, which have been used with such success by them, Dr. E. MUIR in India, the Philippine workers at Culion, etc. Recently Dr. HENRY has examined Gorli seed oil from Sierra Leone, which had been found unsatisfactory in treatment in the Philippines, and showed the failure to be due to its containing only the comparatively inactive chaulmoogric acid and none of the active hydnocarpic acid, so that the two oils already mentioned, together with that from *Hydnocarpus anthelmintica* of Siam, Indo-China and China, are the best for use in this disease. In connexion with the oral use of the seed more recently recommended it is pointed out that all the species yet examined contain cyanogenetic glucosides, and in Hamburg in 1911 a Hydnocarpus oil used for the manufacture of edible articles gave rise to cases of poisoning.

Dr. J. F. ROCK has reported on the localities of these oil bearing trees. The Taraktogenos grows in Assam, Burma, Malay, the Dutch East Indies and Indo-China, best in a hilly humid area with winter temperature not below 40 F°, and Hydnocarpus in well drained sandy or loamy silt soils and best along creek beds or on banks of streams; all require climates of the tropical evergreen forest. It is difficult to obtain the pure fresh oil of the Taraktogenos, but *H. wightiana* in the Western Ghats of south-west India from North Kanara to Travancore up to 3,000 feet above sea-level grows to 50 to 100 feet. *H. anthelmintica* is known in Siam as "Maikrabao" or "lukrabao," and in China as "Ta-fung-tse," and is cultivated in Siam up to elevations of 1,000 feet, and grows especially on the banks of rivers and estuaries. The seed obtained from native collectors is unreliable, but when the trees that have been established in various countries bear in a few years time it will be available. For transmission the seed should be packed in moist powdered charcoal in cotton bags wrapped in strong oil paper and then in heavy manilla paper in order to secure its vitality. Much remains to be learned of the group.

L. R.

PERKINS (Granville A.). **A Summary of Recent Developments in the Chemistry of Leprosy Therapy.**—*Jl. Philippine Islands Med. Assoc.* 1925. Dec. Vol. 5. No. 12. pp. 369-374. [1 ref.]

This paper gives an interesting summary of the work done on the chemistry of chaulmoogra, and other oils used in leprosy treatment in Philippines and elsewhere in recent years. "Certain oils, or their derivatives, properly applied, cause retrogression of the disease in the large majority of cases" if without serious complications; they "require a long time and careful supervision, but apparent or actual cure can be eventually effected in the large majority of the cases properly treated at a sufficiently early stage of the disease, and in a smaller percentage of more advanced cases." The chaulmoogra oil series, containing fatty acids characterized by the presence in the molecule of a closed ring of 5 carbon atoms, is the most active, and 8 different preparations containing these oils have been tested by intramuscular use at Culion; none was found superior to the refined oil with 0·5 per cent. iodine. The fatty acids constituting the bulk of the oil are, however, more active in combination with alcohol as ethyl esters, first prepared by Power in 1904 and 1905, and first shown to be effective in a comparatively large group of cases by Hollman and Dean in 1919 in Hawaii, and at the present time 75 litres a month are being made at Culion for use in the Philippines. About 20 preparations containing these ethyl esters have been tested at Culion, and the addition of 0·5 per cent. iodine to lessen its irritant properties has been found best.

" A still more active form in which the chaulmoogra-group fatty acids can be used is that of the sodium salts. Using these, principally by intravenous injection, Rogers (1918) surpassed all previous workers in the effective treatment of a large group of cases. The gradual obstruction of veins caused by this treatment appears to be the main reason against its extensive use at the present time." The oil or ethyl ester homogenized in acacia solution is also very active, and can be used intravenously if sufficiently dilute, but so far has not given as favourable results as the non-emulsified drugs.

Oils other than the Chaulmoogra Group.—While the effectiveness of the chaulmoogra oils has long been known or believed in, " the discovery that entirely different oils can also be employed effectively was made recently by Rogers (1918)." The most important of these is cod-liver oil, the oral use not having been observed to be beneficial in leprosy but " intramuscular or subcutaneous injection, however, whether of the oil or its ethyl esters, has a marked effect, and the purified sodium soap (Rogers' " sodium morrhuate ") is even more active." Linseed oil is more irritating, and has been little used, the derivatives of soya bean oil have been reported on somewhat favourably, these being partly unsaturated, but the very nearly saturated oils such as olive and coco nut oil have little effect in leprosy. At present about 1·5 litres of cod-liver oil with 10 per cent thymol are made monthly for use at Culion. It may therefore be concluded that the highly unsaturated fatty acids injected into the tissues have a definite effect on the disease, but the chaulmoogra group, which are not highly unsaturated, have the greatest effect when injected and also some effect orally, and this group has the advantage of continuing its efficacy until the symptoms have nearly or entirely disappeared; cases on the cod-liver oil preparations tend to reach an unprogressive stage after a few months treatment. At the present time 100 leprosy cases are being effectively treated for one so treated 8 years ago. and the scientific worker has a solid basis on which to build new progress, for recently at Culion acids have been synthesized with similar action and greater diffusibility, further marked advances are not impossible, and results already obtained " certainly give reason to believe that continued efforts within the next few years will succeed, not in eradicating the disease, but in relegating most of its horrors to the past." Further, " its main importance for the future is as a preventive measure " where segregation is impracticable, as in India, where already " treatment is the most important item on the eradication programme, and it is the only reasonable hope for the control of leprosy as a world problem."

L. R.

DE VERA (Bonifacio). **The Effect on Leprosy of Certain Oils not in the Chaulmoogra Group.**—*Jl. Philippine Islands Med. Assoc.* 1925. Dec. Vol. 5. No. 12. pp. 374-378. [3 refs.]

The results of a few trials recorded in this paper are in accordance with those noted in the last paper and with larger trials of E. MUIR in Calcutta. Twenty-five cases with an average duration of 8 years were treated with cod liver ethyl esters and a series of 5 cases with soya bean, olive and coconut oils and their derivatives, and only the first two (cod-liver and soya) gave any marked or moderate improvement.

L. R.

RODRIGUEZ (Jose N.). **Brief Review of the Medical Work at Culion Leper Colony.**—*Jl. Philippine Islands Med. Assoc.* 1926. Feb. Vol. 6. No. 2. pp. 42-49. [20 refs.]

This interesting review opens with the cheerful but cautious statement: "It is now generally recognized that, with the present improved methods of treatment, arrest or definite improvement of the disease can be obtained in the majority of cases, and relative cure in many of the less-advanced and earlier ones," especially as it is based on the experience of 5,200 cases, nearly all fairly advanced ones, of whom 3,200 were continuing treatment with advantage at the time of writing, with an average duration of the disease of 7½ years. The methods have been sufficiently described in the preceding abstracts, so only the results to date need be given here in the words of the paper: "The results have been encouraging and progressive so far. At the end of March 31, 1925, 9·1 per cent. of the patients then under treatment were negative, 22·1 per cent. were markedly improved, 24·8 per cent. were moderately improved, 21·8 per cent. were slightly improved, 11·2 per cent. remained stationary, and 10·9 per cent. had become worse. The above figures do not include negatives who had already been sent to their homes. In all, 545 cases have been declared negative since 1922 up to August 15, 1925. Of these, 238 have already been paroled or discharged, 14 have died, 40 have returned positive before completion of their two-year period of observation in the colony, and 253 are still in Culion, completing their period of observation."

The great work done at Culion still has one serious defect, steps to remedy which are being taken, as revealed in the following sentence: "Fifteen per cent. of the children living at Culion with their parents have become lepers, and 27 per cent. more are showing suspicious signs of leprosy."

L. R.

CULION MEDICAL BOARD. **Leper Segregation and the Treatment of Leprosy.**—*Jl. Philippine Islands Med. Assoc.* 1925. Dec. Vol 5. No. 12. pp. 353-360. [1 ref.]

This valuable and timely series of papers on the Culion work may appropriately be concluded with the opinions of the whole Medical Board recorded in this paper. The right to segregate persons especially dangerous to public welfare is emphasized and its necessity is based on the disease being a contagious and particularly loathsome one, which may become epidemic in newly infected communities such as the Hawaiian and Loyalty Islands. Leprosy "in terms of human misery is in a class by itself", it inspires remarkable popular fear, and the diseased become outcasts dependent on public care, so "it is important to reduce the numbers by taking charge of the leper before, not after, he has passed the infection on to others" and a relatively heavy expenditure to eradicate the disease may in the long run be more economical than making "permanent provision for the care of constant or increasing numbers of indigent lepers."

The improved treatment has led to the formation of a dual plan of caring for the segregated lepers by (1) assigning cases susceptible to effective treatment to Treatment Stations, with segregation of the sexes, situated in the principal leprous regions; and (2) sending on cases proving unamenable to treatment to the Culion Colony, where they live more normal and happy lives. The numbers there will be gradually reduced as negative cases are paroled or discharged, and by the effect of the normal death rate on its population until it is eventually closed; while the numbers at the treatment centres will be great at first as early cases are attracted, but will fall with recoveries and the reduced sources of infections and consequent number of new cases, the increased expense for a time being compensated by accelerated reduction of the total number of lepers in the Islands. Clinics for the treatment of early non-infectious cases on the Indian plan will also be started for cases found to be negative bacteriologically, while research to improve still further the treatment and early diagnosis will be pursued.

L. R.

DE MELLO (Froilano). Breves considerações sôbre o estado actual da Quimioterapia antileprosa (com impressões clinicas pessoais sôbre algumas das medicações preconisadas). [**Present-day Views on the Treatment of Leprosy by Chemical Means.**]—*Bol. Ger. Med. e Farmacia.* 1925. Mar.-June. 10th Ser. Nos. 3-6. pp. 62-82. [60 refs.]

This paper, which was communicated to the Portuguese Congress of Science held in Coimbra, is a general survey of the chemical treatment of leprosy. Various drugs are mentioned and extracts from reports in the literature of such are given, notably chaulmoogra oil and its derivatives, antimony, and arsenic in different forms. The author concludes: (1) That at present the hydnocarpates and ethyl esters of chaulmoogra constitute the best means of treating the disease; (2) That the active principles contained in chaulmoogra and allied plants are present in other animal and vegetable oils and that the destructive action of these on acid-fast bacilli would be a fruitful subject for investigation; (3) That antimony is of great help in leprosy; (4) That, in spite of good results recorded from the use of arsenic (eparseno), the utmost caution is needed in its employment.

H. Harold Scott.

CHINA MEDICAL JOURNAL. 1925. Dec. Vol. 39. No. 12. pp. 1133-1135. **General Directions for the Treatment of Leprosy.**

This is a brief note summarizing the well-known treatment as advised by E. MUIR.

L. R.

TRAVERS (E. A. O.). **The Treatment of Leprosy at Kuala Lumpur, Federated Malay States.**—*Proc. Roy. Soc. Med.* (Sect. Trop. Dis. & Parasit). 1926. Feb. Vol. 19. No. 4. pp. 1-9. With 8 figs. [1 ref.]

This paper records further experience of the Chinese treatment of leprosy by oral administration of a powder consisting of :—

Hydnocarpus anthelmintica seed	3 parts
Cannabis indica	1 part

half a drachm twice daily soon after food for adults and proportionately less for children, measured with a little aluminium cup, the mixture being made up fresh every week. *H. wightiana* seed was tried, but was found to be irritating to the stomach. Of 275 cases under treatment for over three months, 218, or 79·2 per cent., showed definite improvement; during 1924 31 cases showing no remaining signs of leprosy were examined bacteriologically and 9 were found to be negative, while during the first eight months of 1925 of 27 examined 14 were negative after approximately two years' treatment, and of 200 cases, 81 per cent. were improved and 11·5 per cent. negative. If febrile reactions occur the treatment is stopped for a time, such reactions being followed by improvement. In only 2 per cent. did irritation of the kidneys ensue. The treatment is very popular among men, women and children, and occupies very little time—half an hour for 350 cases—and only costs three pence per month per patient, which will be reduced when systematic collection of the nuts is carried out. The general health improves. Photos of four cases before and after treatment show considerable improvement.

L. R.

DEFILLO (F. A.). Le traitement de la lèpre dans la République dominicaine. [**Treatment of Leprosy in the Dominican Republic.**] —*Presse Méd.* 1926. Mar. 20. Vol. 34. No. 23. pp. 363-365. With 7 text figs.

Situated at the eastern end of the island of Haiti in the West Indies this area has a hospital for 50 lepers not far from the capital, the cases being mostly nodular, for purely nerve cases are rare. It has been found that the addition of tannic acid enables larger doses of chaulmoogra oil from the Taraktogenos seed to be taken orally without digestive trouble, in the following prescription :—Fluid extract of American *Rhizophora mangle* 20 gm., Sassafras 5 gm., Rubus 5 gm., glycerine pure 5 gm., and oil essential of sassafras 10 drops. Five drops of chaulmoogra oil are given twice daily after food, and immediately followed by 25 to 40 drops of the foregoing mixture, the oil being increased daily by 6 drops without increasing the mixture until 50 to 100 drops are taken daily. Cod-liver oil may also be given as a tonic and to lessen the irritant action of chaulmoogra, and chaulmoogra, thymol and guiacol have been injected as well as other remedies. The results are said to be good, but no data are given.

L. R.

HASSON (James). **A New Method of Diagnosis and of Vaccine Treatment in Leprosy.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. Jan. 21. Vol. 19. No. 7. pp. 349-354. With 6 figs. on 1 plate & 1 text fig. [20 refs.]

The writer first refers to his treatment of leprosy with amino-arsenophenol, which he claimed to be a rapid cure of leprosy, but which after receiving some support has been found of little value by recent writers. Unlike most experienced workers, he discards chaulmoogra oil therapy as of little value, and claims success in a number of cases in which that treatment had failed by using "a stock vaccine—an autolysate—containing fifteen thousand millions of *Bacillus pyocyaneus*, and about five thousand millions of Hansen's bacillus to two cc. of physiological saline solution. The Hansen's bacilli are procured by a special method, and are taken from subjects suffering from Hansen's disease." The method of preparation is to produce blisters by the application of carbonic snow, which are emptied after 24 to 36 hours, and the sera thus obtained from a number of lepers are kept in an incubator for fifty days to three months at 36° C. only. The serum is prevented from coagulating by adding 2 per cent. sodium citrate, a mixed culture of *Bacillus pyocyaneus* is added, the whole centrifuged for 20 minutes and the bacilli counted and the vaccine put up in ampoules ; the solution must be at least 50 days old. Photos of three cases showing great improvement are given, one case having been first treated by eparseno, while in the other two the vaccine treatment is stated to have been "consolidated" by injections of chaulmoogra or hydnocarpate. It is not therefore possible to say how much of the improvement is due to the vaccine, although it has long been known that vaccines made of lepra bacilli may bring about reactions with improvement.

L. R.

Row (R.). **Treatment of Leprosy by a Vaccine of Autolysed Tubercle Bacilli.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. Jan. 21. Vol. 19. No. 7. pp. 407-410. With 4 figs. on 1 plate. [5 refs.]

Various forms of tuberculin have been in use in leprosy for some 35 years with little benefit, and the present writer brings forward yet another modification of this method, the vaccine consisting of autolysed cultures of tubercle bacilli which have been washed free of fatty substances by means of petrol ether. Three cases in which it was followed by improvement are recorded. weekly subcutaneous dosage being used for a number of months. Photos of two cases are given.

L. R.

Hirst (L. Fabian). **The Treatment of Leprosy : a Suggestion.**—*Ceylon Jl. Sci.* (Section D. Med. Sci.) 1925. Nov. 18. Vol. 1. Pt. 3. pp. 107-109. [5 refs.]

The writer refers to differences of results with chaulmoogra oil preparation in different places, and suggests that the value of the oils may depend on " a product of high energic chemistry " as defined by Prof. E. C. G. Baly, F.R.S., and that an oil may possibly be improved by certain light or sun rays.

L. R.

Puente (José J.) & Pierini (Luis E). Ensayo de tratamiento de la lepra por el tiosulfato de oro y sodio (Sanocrysina). [**Sanocrysin in the Treatment of Leprosy.**]—*Semana Médica.* 1926. Apr. 1. Vol. 33. No. 13. (1681). pp. 683-684. [5 refs.]

This is a preliminary communication on the use of Sanocrysin in leprosy. The initial dose was 0·025 gm, increasing gradually to 0·5 gm.

Five patients were treated, and all stated that they felt better, but this is attributed to auto-suggestion and the psychic effect of renewed hope of cure with a new drug. The following are briefly the results up to the present. No.1, Nodular form; total amount given 5·15 gm. Result, the nodules seemed to be a little flatter. No. 2. Anaesthetic form; total 5·40 gm. Result: anaesthesia less marked. No. 3. Mixed form; total 4·65 gm. Diarrhoea and weakness set in and no result is recorded. No. 4. Nodular form; 5·30 gm. given. Nodules continued to appear. No. 5. Macular form; 3·25 gm. in all. Diarrhoea, weakness, rise of temperature and loss of appetite, but many of the spots disappeared.

The general impression given, states the author, was that with the doses employed the results were nothing extraordinary.

H. Harold Scott.

BARGEHR (P.). Psychische Einflüsse bei der Behandlung der Lepra. **[Psychical Influences in the Treatment of Leprosy.]**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 6. pp. 756-759. [1 ref.]

Bargehr gives a vivid picture of the reappearance of hope and faith in a leper colony with the introduction of each new medication. The number of temporary objective improvements in various patients, obtained without exception in the early stages of the administration of a new cure, gradually subsides with the increasing disappointment. The author ascribes many of such temporary improvements totally or partly to the influence of suggestion.

W. J. Bais.

GUERRERO (G. Lobo). Tratamiento de la lepra en el lazareto de Contratación. **[Treatment of Leprosy in the Contratación Lazaret.]**—*Repert. de Med. y. Cirug.* Bogotá. 1926. Jan. Vol. 17. No. 4. (196). pp. 194-201.

Two forms of treatment of leprosy are here mentioned, namely with ethyl esters of chaulmoogra oil and with thymol by injection. The dose of the former was 0·5—1 cc. for children up to 12 years of age, 2 cc. for adults at the start, increasing generally to 5 cc, as a maximum, though some can take 10 and even 12 cc. The nodular form yielded more readily; in the nervous form the results were not so good. Two patients in an advanced stage of the disease improved wonderfully—the ulcers cicatrized, infiltration diminished, the general state improved and bacteria diminished in numbers and were seen to be disintegrating. Some patients complained of disturbance of vision, but this is ascribed to the disease and not to the treatment.

In treatment by thymol 5 cc. ampulles of "injectable thymol" in sterilized oil were used for intramuscular injection. The case of one patient, a man of 42 years, is detailed. He had suffered from the mixed form for 12 years; there were extensive patches of anaesthesia, ulcers on the legs and scattered nodules, with loss of fingers, facial paralysis, and so on. For the first three years he had no treatment; for the next six he took chaulmoogra oil by mouth in large does, up to 30 gm. daily. Later this had to be reduced, owing to gastric disturbance, to a maximum of 100 drops daily. During the last year he had 12 injections of the ethyl ester of chaulmoogra, followed by

60 injections of thymol in 5 cc. ampulles every third day, intramuscularly. Considerable pain lasting for several hours was produced, with paroxysms of coughing and dyspnoea, but the final result was satisfactory. The ulcers cicatrized, the infiltration and the nodules disappeared, as did also the maculae, and the sensation returned in some of the anaesthetic areas ; examination of the nasal secretion has revealed no lepra bacilli.

H. Harold Scott.

CAVALCANTI (Ettore Catolla). Sopra un caso di lebbra. [**A Case of Leprosy.**]—*Riforma Med.* 1926. Feb. 1. Vol. 42. No. 5. pp. 114-117.

A very detailed account of a woman of 67 years, suffering from the mixed form of leprosy. There is nothing particular to note, and the case appears to have been deemed worthy of record because of the rarity of the disease in Gorizia. The patient had, however, resided also in Egypt, Arabia and Zanzibar.

H. Harold Scott.

MACARTHUR (W. P.). **Some Notes on Old-Time Leprosy: the Case of King Robert the Bruce.**—*Jl. Roy. Army Med. Corps.* 1926. May. Vol. 46. No. 5. pp. 321–330. [Refs. in footnotes.]

It is stated in text-books that " Robert Bruce died of leprosy in 1329." Colonel MacArthur examines the evidence and shows that this is a legend due to the error, probably malicious, of a nameless clerk. In contemporary records there is no suggestion that Bruce was a leper.

A. G. B.

MALARIA.

CHRISTOPHERS (S. R.). **Two Malarial Surveys connected with Industrial Projects in certain very highly Malarious Localities in India. Part I. Report on Malaria at the Assam Sugar Estates and Factories Ltd., Nalbari, Assam, 1921. Part II. Enquiry on Malaria, Blackwater-Fever and Ankylostomiasis in Singhbhum. Report No. 1.**—*Indian Jl. Med. Res.* 1925. Oct. Vol. 13. No. 2. pp. 343-362. With 2 maps and 2 charts in text. pp. 363-405. With 6 maps and 4 figs. on 1 plate.

Originally published as Government reports, these are now, on public demand, given a wider publicity.

Part I.—On gently sloping ground, 8 miles from the foot of the Himalayas, with a soil of 2 feet of black humus on sand, an annual rainfall of 100 inches, and a high subsoil water level, lies this estate. It is cut by large drains into quarter-mile square plots, which, in turn, are intersected by smaller drains. Since these 60-acre plots form economically worked units, and also hold the best soil, the staff has been housed on trimmings, which lie along swamp and stream in which breed *Anopheles listoni* and *A. minimus.* Small wonder that in this hyperendemic area the spleen index is 91 and the parasite index 81, that infection is nearly all with *P. falciparum,* that it is far higher in those having over, than in those having under, a year's residence, and that recruitment of the staff, European and Indian, is a most difficult matter. The main conclusions are that the Estate should never have been laid out (as it was) without adequate sanitary advice, and that the removal of habitations and factory to the sites which they ought to occupy, due attention being paid to the segregation of the expensive European Staff, is now perhaps economically impossible. It is, however, to be attempted. Christophers had the advantage of seeing Malcom WATSON's work in the F. M S. before making this survey, but does not consider those methods likely to be locally practicable, although it will be remembered that WATSON, dealing with apparently similar land elsewhere in Assam, was of contrary opinion (this *Bulletin,* Sanitation Supplements, 1925, p. 14.). However, as Christophers notes, the possibility of lowering the subsoil water is an engineering problem. The extension to the coolie lines of the drainage methods employed for the cane is advised, but a prophylactic issue of quinine is not.

Part II.—This has already been considered (this *Bulletin,* vol. 21, p. 284 ; vol. 22, p. 396). As is the case in the last project, the economic, and largely preventible, handicap is greatly increased by the unhygienic layout of the bungalows and lines.

Clayton Lane.

SEARLE (A. C. Hammond). **Statistical Investigations with Special Reference to the Incidence of Malaria in Lahore Cantonments.**—*Jl. Roy. Army Med. Corps.* 1926. Mar. Vol. 46. No. 3. pp. 192-196.

In 1904 complete cessation of irrigation was effected in Mian Mir, with the gradual production of a "barely habitable desert in which life was plagued by vast and never ending clouds of dust raised by every animal and vehicle." Was it worth while? Was malaria lessened? Were dust-caused diseases increased? The hospital admission figures are these :—

	Malaria	Simple Continued Fever	Total
1903	1006	60	1066
1904	507	77	584
1905	517	350	383
1906	236	238	478

The figures show the marked antimalarial value of an official order that nothing was to be returned as malaria unless plasmodia were found. Moreover, between 1904 and 1908 25,668 cases of malaria were treated as outpatients; deductions, made as usual from admissions to hospital, are valueless for that period. Stress is laid upon the totally inadequate drainage system and hope expressed that Colonel W. J. MACKENZIE's deep absorption pit may solve the malaria problem more effectively than did the laudably conceived notion of changing the place's name from Mian Mir to Lahore Cantonment.

C. L.

CATANEI (A.). Observations sur le paludisme des indigènes d'Algérie (la Reghaia 1924-1925). **[Malaria among Natives of Algeria, 1924-5.]**—*Arch. Inst. Pasteur d' Algérie.* 1925. Sept. Vol. 3. No. 3. pp. 215-226. [2 refs.]

The report covers 5 consecutive quarterly examinations—from the spring of 1924 to that of 1925—on 83 native children from 1 to 15 years of age. Each examination comprised a smear and 3 thick drops. The results are grouped in various ways in nearly twenty Tables, and a few are here collected. Only one species was recognized on each occasion, but over the series of 5 quarterly investigations the same child was found to display a species, other than that formerly discovered, on 10 occasions, *P. falciparum* and *P. vivax* twice, *P. falciparum* and *P. malariae* twice, and *P. vivax* and *P. malariae* 6 times :—

	Splenic index.	Mean palpable enlargement of spleen, by finger-breadths.	Parasite index.	Gamete index.
1924 Spring	66·6	3·2	17·4	11·5
Summer	72·7	3·4	20·5	10·9
Autumn	75	3·3	50	16·6
Winter	63·1	2·5	32·6	17·3
1925 Spring	63·3	3·1	30·6	14·2

P. falciparum was not however diagnosed unless crescents were seen. The relationship of enlarged spleen to the detection of parasites in the peripheral blood was as follows :—

	Enlarged spleen.		Spleen not enlarged.	
	Numbers examined.	Parasites detected.	Numbers examined.	Parasites detected.
1924 Spring	46	11	69	1
Autumn	53	13	73	2
Summer	45	23	60	6
Winter	29	12	46	3
1925 Spring	31	12	49	3

Enlargement was greatest with *P. malariae.*

C. L.

Archives de l'Institut Pasteur d'Algérie. 1925. Sept. Vol. 3. No. 3. pp. 227-290. With 66 text figs.—Monographies des localités dénoncées comme palustres en Algérie. Etude épidémiologique et prophylactique du paludisme en 1923-24-25. [**Malaria in Algeria 1923-24-25.**]

The details of this report are of local interest only, but locally they must prove of great value now and in the future. Thirty-five localities have been surveyed. In each case the report, admirable in information and brevity, indicates the reason for the particular inquiry, the character of the population, the site of the village, the reservoir of the virus, the indices, the anopheline breeding places, and the hygienic measures required. In each case, too, there is a diagram showing at a glance the spleen and parasite indices, and in nearly all there is a map of the locality (including wadis, railways and roads) or a sketch showing the prevailing physical features, or both.

C. L.

Mazzolani (Domenico.). Grave risveglio della malaria a Tripoli-città. [**Intense Recrudescence of Malaria at Tripoli.**]—*Riv. di Malariologia.* Rome. 1926. Jan.-Feb. Vol. 5. No. 1. pp. 54-58. [English summary p. 112.]

"Known before the Italian occupation and aggravated in 1912-13, malaria had diminished progressively, and from 1921 until the middle of 1924 had practically disappeared from Tripoli and its suburbs; but in the second half of 1924 it again appeared, and increased in intensity in 1925 until entire families were stricken. This recrudescence can be ascribed to the impetus given to building under the Governorship of Count Volpi, so that many new constructions arose near almost abandoned wells and reservoirs, breeding *Anopheles.* This had very grave results, among which was the abandonment of some houses and property. On September 21st, 1925, a sanitary ordinance against malaria was issued by the Municipality."

C. L.

van Hoof (L.). Le paludisme dans la région de Léopoldville. Epidémiologie, prophylaxie. [**Malaria in the Leopoldville District.**] —*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 79-91. [7 refs.]

In and about Leopoldville, of 512 children 397 had enlarged spleen, 173 showed schizonts of *P. malariae* and 220 of *P. falciparum*, while gametes of these species were present in 62 and 36 severally. In 72 splenomegalies no parasites were found at the first examination, and 83 children with parasites had no splenomegaly. Presumably the blood was examined in a single thin film. The parasite index varied from 48 to 93 and the spleen index from 52 to 94. Gametocytes were present in 17 to 19 per cent. of infections.

C. L.

VAN NITSEN (R.). L'index endémique de paludisme à Panda-Likasi. [**Endemic Index of Malaria at Panda.**]—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 93-96.

Panda is, after Elizabethville, the largest centre of Katanga. As compared with figures by WALRAVENS for the latter, the relative malarial incidence is as follows :—

	Elizabethville.	Panda.
Spleen index	46·8	50·6
Parasite index	46	59·7
Percentage of		
P. vivax	97	76·5
P. malariae	0.4	23·4
P. falciparum	2·5	0

C. L.

DE VERTEUIL (Eric). **Some Observations on Malignant Tertian Malaria in Trinidad, B.W.I.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Oct. 15. Vol. 19. No. 4. pp. 235-239. [2 refs.]

In Trinidad, isolated from the mainland by several miles of sea, clearance of undergrowth with opening up of the country has resulted in the gradual and simultaneous disappearance of subtertian malaria and blackwater fever, so that these are now limited to a few spots, where the diseases occur together. Although the studies of DARLING and others in Panama leave little doubt that *A. tarsimaculatus* and *A. albimanus* are there the local carriers of malaria, and although they form between 80 and 90 per cent. of local Anopheles, de Verteuil believes *A. argyrotarsis* and *A. maculipes* are the local carriers of subtertian malaria. His reason is that the clearance of undergrowth which eliminates malaria of that type has no apparent effect on the numbers of the first two species. Moreover, *A. argyrotarsis* is the common species on the adjacent Venezuelan mainland, which has the reputation of being a centre of subtertian malaria ; and in British Guiana, with a similar reputation.

The striking confinement of subtertian malaria to localities or houses was investigated in 13 cases, and it was noted in all that pigs were kept. Inquiry is being made as to whether pigs are susceptible to malaria, or whether *A. argyrotarsis* breeds in their footprints. Regarding symptoms, gastric and algid types are described in children and in adults. For treatment, intramuscular injection of quinine bihydrochloride, in dosage of 20 to 40 grains repeated in 6 to 8 hours, is advised, after which those surviving can usually continue the drug by mouth, the percentage of survivals being unmentioned. For vomiting, adrenalin, 5 to 8 minims by mouth or hypodermically, is strongly advised.

C. L.

DAVIS (Nelson C.). **A Field Study of Mountain Malaria in Brazil.**—*Amer. Jl. Hyg.* 1926. Jan. Vol. 6. No. 1. pp. 119-138. With 2 charts. [12 refs.]

"An examination was made of 201 persons living in railroad construction camps in the mountains near Andra dos Reis, State of Rio de Janeiro, Brazil. Thirty-nine infected individuals were found, of whom ten were gametocyte carriers.

"The predominant local anopheline mosquito was *A. bellator*, known in Brazil as *Anopheles* (or *Myzomia*) *lutzi*. In a series of over 400 stomach dissections of this species one cyst was found, in a mosquito captured while biting a *vivax* gametocyte carrier. More than 150 of the mosquitoes examined were known to have fed on the blood of gametocyte carriers. This mosquito, therefore, shows an extremely low grade of susceptibility to infection with *Plasmodia*.

"The presence in the locality of the following additional anopheline mosquitoes was verified:

A. eiseni (*A. tibiamaculatus.*)
A. (*Myzorhynchella*) *lutzi*, and
A. (*Cellia*) *argyritarsis*.

"It is suggested that the last named species is probably responsible for a large part of whatever new infections occur in the region. Much fever is attributable to relapses."

C. L.

PESSOA (S. B.) & PRADO (A.). Ligeiras notas sobre a malaria em S. Vicente. [**Malaria in S. Vicente, Brazil.**]—*Ann. Paulist. Med. e Cirurg.* 1925. Nov. Year 13. Vol. 16. No. 11. pp. 142-148. With 3 text figs. & 5 figs. on 1 plate.

Malarial mortality in S. Vicente, S. Paulo, Brazil, has greatly increased during the last 4 years, reaching, during the first 5 months of 1925, 28 in a population of 8,000. It affects the suburbs more than the city. *P. vivax* and *P. falciparum* are the parasites. *Anopheles argyrotarsis*, *A. allopha*, *A. tarsimaculata* and *A. pseudomaculipes* were affected. The spleen index reaches 45 per cent. Paris green was used as a larvicide.

C. L.

SCHÜFFNER. (W.). Het Eerste Internationale Malaria Congres te Rome. [**The First International Malaria Congress at Rome.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1926. Vol. 66. No. 1. pp. 66-79.

The author gives a condensed review of the material dealt with by this Congress (*ante*, p. 129). Further summarizing appears impracticable. Yet a few points deserve closer attention, especially because Prof. Schuffner refers to some results of personal contact of scientific workers during the congress.

Convincing argument was brought about for the recognition of a genuine form of blackwater fever, caused by Leptospira (Schuffner, BLANCHARD and LEFROUS, van HOOF). As these cases show a striking similarity to yellow fever, they may support BENTLEY'S opinion that yellow fever does occur in East Asia, but never leads to epidemics, because Stegomyia is not nearly so prevalent there as it is in Central America.

JAMES'S opinion, that malaria affects the healthy and strong equally with the weak and sickly, is confirmed, and the author accordingly denies any important influence of economical conditions on the prevalence of malaria (SERGENT).

NOCHT'S experiments are worth mentioning. He succeeded in inducing blackwater fever in dogs by quinine after preliminary treatment with an haemolytic amboceptor.

The price of quinine was a subject of discussion. Schuffner explained that the price cannot, for economical reasons, be less than about 60 gold francs per kilo.

The author appreciates highly the real international spirit which was noticeable during the congress.

W. J. Bais.

PITTALUGA (Gustave). L'état actuel de l'endémie de paludisme en Europe, les facteurs de sa variabilité, les moyens de les prevenir. [**Present State of Malaria in Europe.**]—*Semana Méd.* 1926. Mar. 25. Vol. 33. No. 12. (1680). pp. 626-629.

The influence of the recent Malaria Commission of the League of Nations, and particularly that of Colonel JAMES, seems to be potent here. The factors enumerated as causing variation in endemicity are : movements of the population, their agglomeration, modifications of their domestic and agricultural life, insufficiency of quinine, and famine. Measures of three kinds are advised :— Strengthening of the antimalarial service of troops on foreign service with a view to obtaining the better detection of infected persons, particularly of gamete carriers; close antimalarial scrutiny of new arrivals, whether as individuals or in mass, in endemic countries, with a view to preventing the introduction of fresh strains which will increase endemicity ; the collection of stocks of quinine in each country adequate for emergencies.

C. L.

GEMAYEL (Amin). La malaria en Syrie, autrefois—aujourd'hui. [**Malaria in Syria, Past and Present.**] *Presse Méd.* 1926. Feb. 17. Vol. 34. No. 14. pp. 219-220.

The writer contends that malaria was known in Syria and Palestine from the earliest times. He believes that Deuteronomy xxviii, 22, refers to malaria " The Lord shall smite thee with a consumption, and with a fever, and with an inflammation, and with an extreme burning." As linguistic evidence he cites the variety of Syriac terms covering quotidian, tertian, quartan and other forms of fever, the names of localities, and local literature, such as the words of Harès, the physician so extolled by the prophet of Islam himself. " An unhealthy land is one wooded and infested with mosquitoes which are the source of illness " Then there is the report of Abdullah Jabbour in 1884 as noted in " La Nature " " In my district of Racchaïa it is completely established that it is the mosquito which carries the poison of marsh illness."

C. L.

SWELLENGREBEL (N. H.) De reis der malaria-commissie van den Volkenbond naar Spanje, 13 Augustus—7 September, 1925. [**The Visit of the Malaria Commission of the League of Nations to Spain.**]—*Nederl. Tijdschr. v. Geneesk.* 1926. Jan. 30. Vol. 70. 1st Half. No. 5. pp. 424-431.

A comparison is drawn between the radical campaign carried out in the relatively wealthy Jewish colonies in Palestine and the methods of Spain, where the most rigid economy is essential and where the means employed are the treatment and retreatment of the human carriers of infection ; means rendered possible by the docility of the people and by the relative absence of subtertian malaria. The first difficulty has been to bring medical aid to the poor and scattered population, and, in solving it, the question of malarial relief has become a part merely of the generally improved medical service. To this end the Central Malaria Commission of Spain—apart from its research side carried through by the National Hygienic Institute of Alphonso XIII and the Institute of Parasitology of the University of Madrid—has established antimalaria clinics staffed by specially trained health officers, by senior students as interns, and by students in training. In these clinics blood examinations are made, and from them treatments are given. The work has the stamp of an urgency measure, and the aim is to make permanent the present temporary benefits.

C. L.

PIPPIA (Giuseppe). Il reperto del parassita malarico nel sangue, durante il periodo interepidemico. [**The Malaria Parasite Findings in the Inter-Epidemic Period.**]—*Riv. di Malariologia.* Rome. 1926. · Jan.-Feb. Vol. 5. No 1. pp. 25-34. [English summary p. 111].

The author examined the malaria patients of a dispensary and of a school in Sassari, during the inter-epidemic period of 1924. The parasite index was reduced between January and May from 85 per cent. to 43 per cent. and rose abruptly with the reappearance of the epidemic. From March to May the benign tertian exceeded the subtertian form, although the latter predominated during the other months. Gametocytes were always present in smaller numbers than schizonts, except in benign tertian during the inter-epidemic period. Mixed infections were frequent (up to 8 per cent.). Cases of quartan were found, the existence of which during the inter-epidemic period has been denied. A high parasitic rate was noted with absence of febrile attacks in a young man.

C. L.

LANDRIEU (M.) & SENEVET (G.). Le paludisme à Mytilène ; relation de l'épidémie qui atteignit le corps d'occupation de cette ile en 1916. [**Malaria among the Forces occupying Mytilene in 1916.**]—*Arch. Inst. Pasteur d' Algérie.* 1925. June. Vol. 3. No. 2. pp. 132-137. With 1 text fig.

The conditions on that part of the Island of Mitylene occupied in February 1916 by 300 French troops were such that an outbreak of malaria was confidently expected, and recommendations were made that preventive quinine should be issued to troops and Greek refugees, unnecessary collections of water should be suppressed, the banks of the stream cleared of jungle, and a screened hospital prepared. In effect the matter ended with the issue of quinine to the troops only and that without supervision, except where commandants with colonial experience cleared the little patch of stream bank adjoining their own camp. In June the malaria cases began to come in, 22 in 15 days, when the writers were relieved of further local responsibility by their transfer elsewhere.

C. L.

PROCEEDINGS OF THE FIRST VOLGA MALARIA CONGRESS HELD AT SARATOV, 5-8 OCTOBER, 1924. (Pub. by the Saratov Govt. Dept. of Health : Saratov, 1924). 126 pp. [In Russian.]

The *Proceedings* contain the reports of delegates from the different provinces in the valley of the Volga. They deal with the incidence of malaria, the results of anti-malarial campaigns and clinical questions.

The Statistical Department of the Commissariat of Health records 3,200,000 cases of malaria throughout the republics (excluding Georgia) for the first seven months of 1924, as compared with 3,150,000 cases for the same period in 1923.

It is noted that, although the figures for the two years are almost equal, the geographical distribution of malaria changed considerably in 1924, a definite decline being observed in northern provinces, part of the central provinces and along the Volga, whilst in the Ukraine, S.E. Russia, the Urals and Siberia there was a considerable increase. The incidence of malaria in some localities for the years 1923 and 1924 is shown in the following table :—

Locality.	1923.			1924.		
*Yaroslavl Province	7,754	7	months.	2,307	7	months.
*Nijni-Novgorod ,,	89,705	7	,,	54,123	7	,,
*Kazan ,,	245,133	12	,,	158,673	7	,,
*Simbirsk ,,	113,935	6	,,	72,716	6	,,
*Samara ,,	373,780	7	,,	273,329	7	,,
*Saratov ,,	210,838	7	,,	142,336	7	,,
*Astrakhan ,,	65,405	6	,,	70,108	6	,,
Archangel ,,	14,027	7	,,	1,894	7	,,
Moscow ,,	102,234	7	,,	30,649	7	,,
,, (city only)	11,854	7	,,	3,344	7	,,
Ryazan Province	49,929	7	,,	25,503	7	,,
South Eastern region	252,652	7	,,	365,595	7	,,
Ukraine	143,885	7	,,	390,197	7	,,
Ural region	59,324	7	,,	271,884	7	,,
Siberia	140,612	7	,,	309,713	7	,,

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*Localities marked with an asterisk are in the Volga region.

In the valley of the Volga malaria has always been endemic, but during recent years there have occurred particularly severe outbreaks. Attention is directed to the connection between poor harvests and outbreaks of malaria [this *Bulletin*, vol. 21, p. 291.]

The type of malaria prevalent in most of the provinces of the Volga was benign tertian, malignant tertian malaria occupying the second place, although in some districts (Simbirsk province) it was predominant. Quartan malaria was rarely observed.

There are several reports dealing with congenital malaria. In Tsaritsin LIACHOVETZKY discovered parasites in the blood of six out of eight new-born infants. LOPATIN reported eight cases from Saratov. The ages of the infants ranged from 10 minutes to 28 days, and in all cases the type of parasite in the infant corresponded with that found in the mother.

KITAEV ("On the parasitology, pathogenesis and treatment of comatose malaria") observed 58 cases of comatose malaria, of which 28 ended fatally. In all these cases the parasite was *Plasmodium* *falciparum*(in four cases associated with *P. vivax*). The author recommends the administration of large quantities of quinine (4-5 grams during the first two days) subcutaneously.

TARTAKOVER (" Results of treatment of malaria by a combined method : Neosalvarsan—quinine ") claims success in treating quinine-resistant cases by administering neosalvarsan at intervals during the course of quinine treatment.

SOLOMIN, in a paper " On the treatment of malaria in cases of idiosyncrasy " [to quinine], recommends intravenous administration of quinine, beginning with minimum doses (0·025 gram) and gradually rising to the maximum tolerated dose. It is claimed that this method leads to a gradual adaptation of the organism to therapeutic doses, provided the treatment be continued without interruption, since the adaptation acquired by the organism is liable to vanish rapidly.

C. A. Hoare.

DOBREITZER (I. A.). Die Verbreitung der Malaria in U.S.S.R. in Jahre 1925. [**Distribution of Malaria in U.S.S.R. in 1925.**]—*Russian Jl. Trop. Med.* 1926. No. 1. German summary pp. 27-28. [In Russian pp. 11-14.]

Returns for the first nine months of 1925 show 4,242,070 malaria cases for Soviet Russia, as against 5,238,636 for the corresponding period of 1924. There have been increases in Azerbajdshan, Armenia, and White Russia. There has been one maximum in May and another in August-September, the latter mainly comprising subtertian and quartan infections.

C. L.

PAVLOVSKY (E. N.) **On the Appreciation of "Primariness" of Malaria for the Given Locality in Connection with the Outbreak of Malaria in the Outskirts of Leningrad.**—*Rev. Microbiol. et Epidémiol.* 1925. Vol. 4. No. 4. English summary pp. 129-130. [In Russian pp. 9-13.]

The writer concludes that in 22 cases of malaria which appeared in May and June, 1925, on the outskirts of Leningrad the period climatically suitable for anopheline development and incubation in man was too short to permit of infection having been local. All had reached Leningrad for the first time in the autumn of 1924, and had, it is concluded, arrived infected. A primary attack of malaria in a non-malarial community may be due to (1) Infection latent in an individual but first disclosing itself after his transference to a new locality, (2) Infection produced by transference of an infected mosquito to a new locality, (3) Infection by a mosquito locally infected in a new locality from an infected immigrant.

C. L.

ABRAMOW (A. W.). Zur Pathogenese der Malaria tropica auf Grund täglicher Blutuntersuchungen. [**The Development of Subtertian Malaria as shown by Daily Blood Examination.**]—*Russian Jl. Trop. Med.* Moscow. 1925. No. 1-2-3. German summary p. 71. [In Russian pp. 7-11.]

It is concluded that relapses depend, not on the biology of the parasites, but on the immune state of the body. Abramow has not found gametes earlier than the end of the second week (on the average 17 to 19 days) of a first attack. [See, however, Warrington YORKE, p. 554, infra.]

C. L.

DE BUEN (Sadi). Datos epidemiologicos contrarios a la unidad de los parasitos del paludismo. [**Epidemiological Data Contradictory to the Unicity of Malaria Parasites.**]—*Rev. Méd. de Barcelona.* 1925. Nov. Year 2. Vol. 4. No. 23. pp. 460–63. With 4 text figs.

Charts show that the lines indicating the monthly incidence of the different forms of malaria parasite may either be roughly parallel or may be opposite. That is to say, when the incidence of *P. vivax* lessens that of *P. falciparum* may either lessen or may increase. Moreover, the effects in Spain of treatment and prevention have been quite different for the three species, and that without making any difference in surroundings other than to lessen the numbers of mosquitoes.

C. L.

BOSCH (W. G.). Wederom *Cellia Kochii* de Overbrenger van Malaria. [*Cellia kochii* **again in its Rôle as a Malaria Carrier.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 6. pp. 760–765.

On a rubber estate the spleen index rose in one year from 6·9 to 27·1 in adults, from 7·4 to 32·6 in children Similar figures for the parasite index were 2 and 13·3 ; 7·4 and 36·5. Tertian and subtertian fever was met with. The epidemic was caused by *A. kochi*, of which species 10 of 268 specimens (3·7 per cent.) were found infected. No other infected Anophelines were found.

Experimentally, 86·6 per cent. of *A. kochi* could be infected with subtertian malaria. Catch drains on the rubber estate were found to be the favoured breeding place of the mosquito.

W. J. Bais.

KINGSBURY (A. Neave). **Some Investigations of Malarial Fevers.**—*Trans. Roy. Soc Trop. Med. & Hyg.* 1926. Feb. 18. Vol. 19. No. 8. pp. 459–481. [34 refs.]

In view of the limitations of diagnosis by detection of parasites in the blood Kingsbury aims at a test, serological, biochemical, immunological, or cytological, which would be at least as reliable as are the Wassermann and Widal tests in their respective spheres. The reticulo-endothelium (Kupffer's cells) breaks down haemoglobin and eventually forms bilirubin which will accordingly be increased in the serum in all diseases accompanied by rapid destruction of red cells. This haematogenous bilirubin can be distinguished from bilirubin absorbed into the blood from obstructed bile ducts by Ehrlich's diazo reagent, as VAN DEN BERGH has shown. In obstructive bilirubinaemia the violet colour appears immediately ; in the haemolytic condition its appearance is considerably delayed, sometimes so much so that the test appears negative. The test may be checked by VAN DEN BERGH's modification, in which all serum proteins are precipitated by absolute alcohol and the reagent added to the clear centrifugal supernatant fluid ; in these circumstances both forms of bilirubin give an immediate result; moreover, by employment of colour standards it is possible to express the quantity of serum bilirubin in units corresponding to parts per 200,000. The physiological content of bilirubin is generally regarded as 0·5 units, but the writer's figures in 40 normal native controls have varied from 0 to 0·4 units.

In malaria the serum bilirubin units have been as follows: Quartan malaria: average of 8 cases, 0·74; 37 per cent. being normal. Benign tertian malaria: average of 45 cases, 1·21 units; 9 per cent. being normal. Subtertian malaria: average of 97 cases, 2 units; 1 per cent. being normal. The units vary in general with the size of the spleen. The writer agrees with Langdon BROWN that the test is not of great delicacy when applied to the estimation of liver efficiency, which is, of course, quite different from the use which he here advocates. One case of hepatic abscess showed 15 units, another 1·5, and in three of hepatic cirrhosis the figures were 0·5, 0·6 and 1·2.

Regarding the effects of quinine upon this reaction, the reasons are given which lead to the conclusion that the intravenous injection of quinine bihydrochloride causes considerable haemolysis in tertian and subtertian infections, and slight haemolysis in controls. After oral administration there was lysis in subtertian, but practically none in the other forms or in controls; a finding whose suggestive correlation with haemoglobinuria is noted. Under continued quinine treatment the serum bilirubin falls. It is pointed out that the anatomy of the spleen pulp is such that there is but slow diffusion through it of curative substances present in the systemic blood. Regarding urobilin and urobilinogen the experiments cited show that "Ehrlich's test for urobilinogen, when applied for the diagnosis of malaria, is...even less accurate than the finding of an increased output of urinary urobilin."

C. L.

PLEHN (Albert). Immunisierung gegen Malaria [**Immunization against Malaria.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Vol. 30. No. 1. pp. 18-26. [4 refs.]

Plehn's views are these. Effective immunizing against an infection can only be carried out when a natural defence against that infection exists. In malaria this has generally been held to be absent, but observation of general paralytics shows that such view is not altogether correct.

Tertian malaria. Exceptionally a first infection may spontaneously become cured. An attempt at inducing a second infection is usually a complete failure, or, if temporarily effective, the infection rapidly disappears spontaneously, and that whether the first has been cured by quinine or has cured itself. A third infection almost never occurs, so that an immunity has definitely been acquired. The infection will, as a rule, be exterminated by three doses of quinine of 1 gramme each; in two cases it has been cut off in its incubation period by ingestion of 1·2 grammes of quinine on two consecutive days.

Subtertian malaria. The first attack may be fatal in spite of all care. Quinine does not cure but induces latency. Relapses are mild, but only rarely disappear spontaneously. Second and subsequent infections can be induced. Nevertheless by giving doses of quinine too small to have a therapeutic effect the infection may be so influenced that, by continuing and repeating these in conjunction with new infections, it becomes possible to inject intravenously, without ill effect, 2 cc.

of blood containing 10 to 20 per cent. of infected corpuscles; much more so to inject subcutaneously, as does the mosquito. The investigation of the matter is however one of difficulty since patients come to a hospital, not to acquire immunity to subtertain malaria, but to be cured of general paralysis. A cured tertian has no influence on the course of subsequent subtertian malaria. After a previously cured infection of tertian or subtertian malaria, the incubation period of a new subtertian infection may be only 24 hours—there seems to be a sensitizing effect, which corresponds with tropical experience.

The matter of antibodies was taken up. In opposition to the finding of LANGEN and ROSKOTT, the percentage of infected corpuscles was not materially lessened after defibrination, washing in Ringer's solution till free of albumin, and keeping for 24 to 48 hours at room, body or fever temperature. Instead of suspending such corpuscles in Ringer's solution they were removed to a corresponding quantity of serum from subtertian convalescents, who did, or did not, show circulating parasites. In one case the donor was shown to be immune—by lack of response to 2 cc. of intravenously injected subtertian blood. The infected corpuscles behaved in the treated just as they did in the untreated blood [serum ?] or when the suspension fluid came from one at the height of quinine treatment. There was then no evidence of any antibody in the blood. A weighty discussion followed. [The protocols on which these conclusions are based will doubtless be published. It will be noted that the tests are concerned with injected malaria alone, and it should not be assumed without evidence that they indicate the position for mosquito malaria.]

C. L.

STILES (C. W.) & HASSALL (Albert). **Key-Catalogue of the Protozoa reported for Man.**—*Treasury Dept. U.S. Public Health Service. Hyg. Lab. Bull. No. 140.* 1925. May. 67 pp.

Regarding the nomenclature of the malaria parasites, these writers, whose knowledge of the literature is unsurpassed, conclude that, whether the three species be placed in two genera or in one, the specific names should be *vivax*, *malariae* and *falciparum*. Regarding *Plasmodium vivax* and *P. malariae* there is probably no difference of opinion; the subtertian parasite will under these conditions be properly named *Plasmodium falciparum* or *Laverania falciparum*. It will no longer be necessary for those who place the three species in one genus to designate it *P. falciparum* and for those who place them in two to use the term *L. malariae*. The confusing distinction between *P. malariae* the quartan parasite and *L. malariae*, the subtertian parasite, will disappear, while the specific names *praecox* and *immaculatum* will lapse as synonyms. It is of great and obvious advantage that this nomenclature should be generally adopted, and the matter is brought to the prominent notice of medical men in the hope that uniformity in nomenclature may, by this means, be attained and confusion eliminated.

C. L.

HALL (G. Rome). **Malaria in West Africa in 1893.**—*Jl. Trop. Med. & Hyg.* 1926. Mar. 1. Vol. 29. No. 5. pp. 70-76.

An interesting personal contrast of the conditions and medical attitude to disease and its causation holding in West Africa 33 years ago and now.

In the old days, for instance, no white man ventured more than a few yards into the sun between 9 and 4 without an umbrella. This greater resistance to the sun is attributed "to the present day custom of taking 5 grains of quinine every day from landing to leaving."

C. L.

SARCHI (G.). Malaria im Narymschen Gebiet. **[Malaria in the Narym Region.]**—*Russian Jl. Trop. Med.* Moscow. 1925. No. 1-2-3. [In Russian pp. 21-24. 10 refs.]

In the Narym region (Tomsk Province, Western Siberia) the incidence of malaria was 1,750 cases in 1923 and 2,500 in 1924, all benign tertian; a higher figure is expected for 1925. *Anopheles maculipennis* was the only mosquito found in the course of 2 years. The population is mainly Russian, with an admixture of Ostiaks and Samoyeds.

C. A. Hoare.

TOMMASO (Lucherini). Tentativo di cura della leucemia con inoculazione di sangue infetto di "Plasmodium vivax." **[An Attempt to cure Leucaemia by Inoculation of Blood containing** *Plasmodium vivax.*]—*Policlinico.* Sez. Prat. 1925. Dec. 14. Vol. 32. No. 50. pp. 1745-1747.

A child of 14 had a hard spleen overpassing the midline at the umbilicus by 2 fingerbreadths, an enlarged liver, many enlarged lymphatic glands reaching the size of a hazel nut, and a blood picture showing red corpuscles 1,500,000 with anicocytosis, poikilocytosis and nucleated forms, haemoglobin 25 per cent., leucocytes 250,000. Of the last, 73 per cent. were myelocytes. He received subcutaneously 3 cc. of blood containing *P. vivax.* After 12 attacks on alternate days blood examination showed: red corpuscles 1,200,000, haemoglobin 18, leucocytes 4,400. Half a gramme of quinine was given daily. About 2 months later the blood picture was:—red corpuscles 4,400,000, leucocytes 6,100 with a formula practically normal; the spleen was about half its previous size and softer; the general condition was much improved.

C. L.

WINKLER (Ludwig.). Zur Frage der autochthonen Malaria tropica. **[Autochthonous Subtertian Malaria.]**—*Med. Klin.* 1925. Dec. 11. Vol. 21. No. 50. pp. 1886-1889.

Discussing two cases, the second of which was certainly autochthonous, Winkler discusses the autochthonous cases of subtertian malaria reported in Germany and the percentage of all such cases which they form. Prior to 1922 there were none. Since then the numbers have been: 1922, 2 of 47, or 4·3 per cent.; 1923, 7 of 51, or 13·7 per cent.; 1924, 12 of 54, or 22·2 per cent. He stresses the effect of salvarsan in lighting up, perhaps fatally, a latent subtertian malaria.

C. L.

PATRICK (Adam). **Spring Relapses in Benign Tertian Malaria.**—*Ann. Trop. Med. & Parasit.* 1925. Dec. 16. Vol. 19. No. 4. pp. 387-389. [2 refs.]

A subtertian malaria, probably acquired in Bombay in October, was recognized definitely in the West of Scotland on 2nd December, and was treated by a 3 months' course of quinine. No parasites were detected on 7 examinations between 10th February and 8th March. Tertian malaria appeared on the last date and relapsed twice. The case is published because the writer finds no reference to such events in textbooks.

C. L.

GAGE (Alfred). **Algid Malaria.**—*Therap. Gaz.* 1926. Feb. 15. Vol. 50. (3rd Ser. Vol. 42). No. 2. pp. 77-81. With 2 charts.

"If a patient from a malarial district presents himself for treatment with a low or subnormal temperature, profound prostration, cold, clammy skin, anxious expression with eyes sunken, nose sharp and 'pinched,' with or without abdominal pain and rigidity, and with no evidence of severe trauma nor acute intra-abdominal disease, the attendant should not wait for a positive blood, but at once make at least a tentative diagnosis of algid malaria and begin treatment. If all medication is withheld until a positive blood is reported, the parasites will probably be found only at autopsy if at all."

In the five cases reported (from Guatemala) *P. falciparum* was invariably present; in one of them *P. vivax* as well. The treatment adopted has been a hot sponging in bed, followed by hot bottles. Quinine is given intramuscularly, and strychnine subcutaneously. The first quinine injection is of 15 grains, and others of half this strength follow at 6-hourly intervals, till the man can take 30 to 40 grains by mouth daily. "We do not give the injections in heavy doses, since from experience we know that if a large amount of quinine is administered at this critical stage in all probability the patient will not survive."

C. L.

TRABAUD. Des relations entre l'hémoglobinurie, l'hématurie, le purpura et l' ictère érythrophtorique au cours du paludisme de première invasion à propos de trois observations. [**Haemoglobinuria, Haematuria, Purpura, and Haematogenous Jaundice in Primary Malaria: Three Cases.**]—*Revue de Méd.* 1925. Year 42. No. 3. pp. 179-186.

The writer describes 3 cases of primary malaria:—(1) with haemoglobinuria and haematuria without jaundice, with renal colic and subsequent pyelonephritis attributable to *Bacillus coli*, (2) with jaundice and haematuria, and superadded bacillary dysentery, (3) with jaundice and purpura. It is urged that disintegration of red blood corpuscles results in overworking of the liver in its effort to get rid of the freed haemoglobin, with consequent haemoglobinuria. The work of BARRATT and YORKE indicates that the phagocytic endothelial activity induced by destroyed erythrocytes sets free a haemolysin and a substance toxic to the vascular endothelium, the latter causing purpura.

C. L.

MCCONNELL (R. E.) & MCGILL (C. M.). **A Note on Corneal Ulcer in Malaria.**—*Jl. Trop. Med. & Hyg.* 1926. Jan. 1. Vol. 29. No. 1. pp. 3-4.

A man of 46 had two attacks, the first clinically malaria with high fever, the second with malignant tertian parasites detected, but with no note of the clinical condition. On the third day of the first attack, and after the temperature had reached normal, the conjunctiva became inflamed, and a corneal ulcer was detected. He was in hospital for 6 days during the second attack, and 2 days after discharge the trouble recurred in the same eye. It is held to be herpetic.*

C. L.

MILLOUS (Pierre). L'hépatite scléreuse atrophique ascitogène métasplénomégalique paludéenne. [**Malarial Hepatitis.**]—*Paris Méd.* 1924. Aug. 16. Vol. 14. No. 33. pp. 141-147. [30 refs.]

Millous considers the claim of IONESCO and POPPER (this *Bull.*, Vol. 19, p. 582) that there exists a special type of malarial splenomegaly, characterized by atrophic cirrhosis with ascites and establishment of a collateral portal circulation, oedema of the lower limbs, anaemia and hepatic sclerosis of splenic origin. He considers a wide range of literature, points out the probability that the splenic blood runs mainly to the left lobe of the liver, the intestinal to the right, holds that the evidence indicates Banti's disease to be essentially malarial, and certain hepatic cirrhoses to be of splenic origin.

C. L.

AMOSOV (M. M.) & LINDTROP (G. T.). [**Acute Malarial Ataxia.**]—*Russian Jl. Trop. Med.* Moscow. 1925. No. 4-5-6. pp. 3-10. [6 refs.] [In Russian.]

Of a number of malarial cases with acute ataxia, 3 of the most typical are described. All had malignant tertian malaria (in one associated with *Plasmodium vivax*). The course of the disease, as determined by the blood picture, is divided into 3 periods. During the first period, which lasted 3-4 days, active manifestations of malaria with acute ataxia were persent; during the second period (5-7 days) there was improvement; the third is referred to as the latent period. Towards the period of convalescence mental depression and the disturbances of co-ordination gradually disappeared. Most of the cases were successfully treated with large doses of quinine (2 to 4 grammes *per diem*).

It is stated that in Azerbaidjan (S. E. Caucasus) cases of ataxic complication of malaria are not uncommon.

C. A. Hoare.

DEMIANOW (G. S.). [**On the Occurrence of Rash in Malaria.**]—*Russian Jl. Trop. Med.* Moscow. 1925. No. 4-5-6. pp. 11-14. [In Russian.]

The author describes a petechial eruption, chiefly sub-costal, which he has seen in 15 per cent. of 1,926 cases of malaria examined in 1923 in Northern Caucasus. The maculae were pink, similar to roseola, about the size of a millet seed, and irregularly oval in shape. They did not disappear on pressure. The rash usually appeared on the second day of the disease and in treated cases disappeared in about 7 days without leaving any trace.

C. A. Hoare.

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* Colonel ELLIOT writes that superficial keratitis, commencing as herpes of the cornea, has been so widely recognised as a malarial manifestation that we may probably accept it with but little hesitation ("Tropical Ophthalmology," 1920, p. 452).

BUCKINGHAM (E. W.). **Transplacental Malarial Infection.**—*China Med. Jl.* 1925. Dec. Vol. 39. No. 12. pp. 1140-1141.

In each of two instances of congenital malaria the mother had a malarial history. In one child plasmodia were found in the blood before the placenta had been expelled. The other was a transverse presentation with prolapse of the right hand ; a blood smear was made from the prolapsed hand and "plasmodium malariae" detected before the child was born.

C. L.

WESELKO (O.). Untersuchungen ueber kongenitale Malaria. [**Congenital Malaria.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Feb. 1. Vol. 30. No. 2. pp. 73-75.

In 14 cases malaria parasites were found in the cutaneous blood of mother and child immediately after birth, or up to a period of 5 days thereafter. In 6, parasites were found in the placental blood, in 4 in the blood of the cord. Five died within 48 hours. All had spleens reaching at least 2 fingers below the costal margin. The first febrile attack might appear within a few days of birth, with convulsions in subtertian cases. Euquinine was effective in treatment.

C. L.

BRINDEAU (A.) Un cas de paludisme congénital. [**A Case of Congenital Malaria.**]—*Ann. Parasit Humaine et Comparée.* 1926. Jan. 1. Vol. 4. No. 1 pp. 29-30 With 1 chart in text

The mother was infected in Morocco at the third month of pregnancy, reached France at the sixth month, and bore her child at full term in Paris in February. The mother had malarial attacks on the second and fourth days after delivery The child fell ill, evidently still in Paris, on the 24th day and P. *vivax* was detected on the 26th.

C. L.

ANNECCHINO (Francesco Paolo). Un caso di malaria congenita. [**A Case of Congenital Malaria.**]—*Riforma Medica.* 1926. Mar. 22. Vol. 42. No. 12. pp. 285-286. [24 refs.]

The child was born at Pozzuoli, described as non-malarious. The mother had malaria, but was untreated for fear of abortion. Parturition was easy. Forty-eight hours later the infant had convulsions, fever, palpable liver and spleen, the mother having a simultaneous attack. The conditions recurring 48 hours later, examination showed schizonts and gametes of *P. vivax* in the blood of both mother and child.

C. L.

DEMIANOV (G. S.). Ein Fall akuter gelber Atrophie der Leber bei Malaria. [**Case of Acute Atrophy of the Liver in Malaria.**]—*Russian Jl. Trop. Med.* Moscow. 1925. No. 1-2-3. pp. 1-6. [7 refs.] [In Russian.]

A male of 22, suffering from subtertian malaria and jaundice, died 2 days after being admitted to hospital in the Northern Caucasus. Post mortem examination revealed extensive necrosis of the liver with new formation of biliary ducts ; presence of leucin in the liver, and fatty degeneration of the kidneys and heart. The liver was not of the ochraceous yellow colour peculiar to the early stages of the disease, but brownish-red, owing to advanced necrosis and the development of blood vessels. The first attacks of malaria had been succeeded by jaundice which lasted about 3 weeks. A relapse of malaria subsequently led to the development of acute yellow atrophy of the liver.

C. A. Hoare.

Raul Goyena (Juan). Cirrosis esplenohepática palúdica. (A propósito de un caso de hepatitis esclerosa atrófica, ascitógena, pigmentaria, anictérica, metaesplenomegálica) [**Malarial Cirrhosis of Spleen and Liver.**]—*An. Inst. Modelo Clin. Méd.* Buenos Aires. 1924-25. Vol. 9. No. 1. pp. 247-254. [10 refs]

The case is cited of a man of 45 who acquired malaria as a youth, had been a moderate drinker until, 15 years ago, he experienced an attack of formication and cramp in the left arm and became unconscious. He then gave up liquor. There was no history of syphilis. He came in with ascites, a liver margin one finger's breadth above and a splenic apex 7 breadths below the costal margin. Collateral circulation was evident. No malaria parasites were found. He went down hill, but was apparently alive at the time of writing.

C. L.

Mainini (Carlos.). Asthme et paludisme [**Malaria and Asthma.**]—*Bull. et Mém. Soc Méd. Hôpit. de Paris.* 1925. Dec. 3. 3rd Ser. Year 41. Vol. 49. No. 36. pp. 1514-1518 [3 refs] ; also *Semana Médica,* 1926 Feb 18. Vol. 33. No. 7 (1675). pp. 328-329. [4 refs.]

In a man who had for 2 years suffered from asthma, latterly almost continuously, the discovery of crescents in 3 of many blood films lead to the exhibition of quinine by injections, presumably intramuscular, and by mouth The effect is described as marvellous, so that by the sixth day all trace of asthma had gone. A formerly palpable spleen disappeared. There had been no recurrence of asthma up to two years later.

C. L.

Valerio (Americo). Um caso de orchi-epididimite paludica. [**Case of Malarial Epidydimitis.**]—*Arch. Brasileiros de Med.* 1926. Jan. Vol. 16. No. 1. pp. 11-16.

A man of 28, malarial for 4 years with parasites formerly in the blood, without history or evidence of venereal disease or injury to scrotum, developed daily attacks of fever with testicular pain and fluid in the tunica vaginalis. He was treated by autoserotherapy (injection of the hydrocele fluid into the flank) and by quinine, and recovered.

C. L.

von Engel (R.). Seltener histologischer Befund bei Malaria perniciosa synkopalis. [**Unusual Histological Finding in Subtertian Malaria.**]—*Cent. f. Bakt.* I. Abt. Orig. 1925. Nov. 2. Vol. 96. No. 5-6. pp. 340-342. With 5 figs. on 2 plates.

The illness of a comatose man of 24, diagnosed as typhoid, was found on microscopic examination to be subtertian malaria with parasites in 32 per cent. of corpuscles in the peripheral blood, some containing as many as 4 rings. The pulse, it is emphasized, was 130 and very weak. He died shortly after an intravenous injection of 1 gramme of quinine bihydrochloride. The essential feature of a very complete post mortem examination was the packing of the vessels of the heart with infected red blood corpuscles, many with segmenting forms, while other organs were not specially affected.

C. L.

BONADIES (Antonio.). Su due casi di malaria atipica larvata. **[Two Cases of Atypical Masked Malaria.]**—*Giorn. di Clin. Med.* 1926. Feb. 28. Vol. 7. No. 3. pp. 99-103.

In a fairly elevated region, not considered malarial, a case occurred of intense pruritus with red patches, some as large as the palm of the hand, and appearing with a tertian rhythm. In another case intense dyspnoea supervened nightly for three nights accompanied by slight fever. In both the spleen was somewhat enlarged, and in both quinine effected a cure. Diagnosis rests upon the effects of this treatment.

C. L.

i. GHOSH (Nisanath). **An Unusual Case of Malaria.**—*Indian Med. Gaz.* 1925. Dec. Vol. 60. No. 12. p 579.

ii. CHOPRA (S. L.). **A Case of Malarial Prostatitis with Reflex Retention of Urine.**—*Ibid.* p. 582.

iii. CHATTERJI (Khagendra Nath.). **A Case of Pernicious Malaria treated with Quinine intravenously.**—*Ibid.* p. 584.

i. Sudden unconsciousness with a temperature of 97° F. was found due to intense subtertian malaria. Parasites did not disappear from cutaneous blood until 8 grains of quinine bihydrochloride had been given intravenously every day for 6 days and 20 grains of "quinine" by mouth for 3 more.

ii. A heavy subtertian infection with enlarged and tender prostate and retention of urine cleared up under an "acid-cinchona" mixture. There was no evidence of gonorrhoea.

iii. Fever coming on daily with shivering, vomiting and diarrhoea, the last becoming haemorrhagic with collapse, recovered after 5 grains of quinine bihydrochloride and 10 minims of adrenaline solution given intravenously without blood examination.

C. L.

SINTON (J. A.). **Studies in Malaria, with Special Reference to Treatment.** Part I. **Introduction and Routine Methods.**—*Indian Jl. Med. Res.* 1926. Jan. Vol. 13. No. 3. pp. 565-577. [32 refs.]

——. Part II. **The Effects of Treatment on the Prevention of Relapse in Infections with** *Plasmodium falciparum.*—*Ibid.* pp. 579-601. [25 refs.]

——, assisted by RIVAS (B.), BAILY (J. D.) & DIWAN CHAND. Part. III. **The Value of "Provocative Methods" in the Diagnosis of Uncured Malarial Infections.**—*Ibid.* pp. 603-616. [27 refs.]

I. In these investigations exactness has been aimed at by the following procedure. Diagnosis was parasitic and, so far as possible, complications by other diseases were excluded. The drug was given by the mouth; the strength of the quinine solution was checked; its swallowing was determined by making the men talk. The Indian patients being convicts, ingestion of other drugs which might confuse the result could be excluded; the Europeans being soldiers, and very comfortable at Kasauli with its altitude of 6,000 feet, were little likely to take extra quinine with the misguided aim of an early return to their units in the plains. The three malarias were separately considered. The two populations were homogeneous. The number of patients treated in each instance was considerable. Control was effected by rigidly placing each alternate man, as he presented himself, either in a control or in an experimental group. Every man was examined by thick film weekly (Sinton believing that for a trained worker the result is about as accurate as a daily examination of a thin film) for at least 8 weeks after the cessation of specific treatment, and, if fever occurred, at least once and usually twice daily until its causation was determined. Reinfection could practically be excluded at Kasauli. For prisoners the treatment was latterly so arranged that it began after the end of October, and that the 8-week observation period was completed by the end of February, the evidence being that infection is rarely acquired in the plains of the Punjab between those dates.

II. This section consists essentially in a checking of Sinton's quinine and alkaline treatment against other oral methods of cinchona alkaloid administration. This, it may be repeated, consists of

Sodae bicarb.	60 grains (4 grammes)
,, citrat.	40 grains (2·6 grammes)
Calc. carbon.	2½ grains (0·16 gramme)
Water to	1 ounce (28·4 cc)

To be thoroughly shaken.

Quin. sulph.	10 grains (0·6 gramme)
Acid. citric.	30 grains (2 grammes)
Magnes. sulph.	60 grains (4 grammes)
Water to	1 ounce (28·4 cc.)

In all cases 3 grains of calomel at night and an ounce of magnesium sulphate in the morning preceded the course of treatment. It was never found necessary to resort to other than oral administration of quinine. Vomiting could always be controlled by adrenalin hydrochloride (1 in 1,000) m.xx, repeated if necessary. An ounce of the alkaline mixture was given on the first day of treatment at 7.30, 9.30 and 11.30 a m., and an ounce of the quinine mixture 20 minutes after the last dose. For subsequent treatment an ounce of the alkaline was followed by an ounce of the quinine mixture. The experiments are described in detail. The controls consisted of men taking the plain quinine mixture, as above, without the alkaline one. Combining 5 sets of experiments, the results are as follows :—

Drug.	Total.	Not relapsing, but observed for less than eight weeks	Relapses observed *P. vivax*	*P. falciparum.*
Quinine and alkali ..	281	40	23	38
Quinine alone ..	237	32	14	112
Cinchona febrifuge and alkali ..	119	14	2	41
Cinchona febrifuge alone	120	14	2	51

Quinine resistance has not been found. Even a patient with a history of taking over 2,500 grains of quinine during a period of 71 days, with 6 relapses in that time, retired defeated when subjected to a weeks' course of quinine and alkali under the fraud-eliminating conditions above described. "The evidence goes to show that an 8-week's observation period, with weekly blood examination by the thick film method, will reveal most, if not all, the uncured infections of *P. falciparum.*" None of the patients diagnosed before treatment as having mixed infections relapsed with *P. falciparum.*

III. Experiments made with strychnine as provocative agent in about 200 cases, as well as observations on some men injected with typhoid-paratyphoid vaccine, and on others receiving intravenous tartar emetic for oriental sore, lead to the conclusion that these methods advantaged diagnosis little, or not at all.

These papers deserve better usage than the printer has meted out to them.

C. L.

Ross (Ronald). **The Treatment of Malaria in Britain.**—*Practitioner.* 1925. Nov. Vol. 115. No. 5. (No. 689). pp. 301-311.

Ross reviews for general practitioners in England his well known work on the proportional destruction of malaria parasites by each dose of quinine, and the basis which this affords for his 3-months' curative course of 10 grains of quinine sulphate orally each day. He particularly notes his experience that hookworm infection often retards the benefits of quinine.

C. L.

Seguin (T.). Du traitement du paludisme, maladie essentiellement curable. (4^e communication). [**Treatment of Malaria, an essentially Curable Disease.**]—*Bull. Soc. Path. Exot.* 1926. Jan. 13. Vol. 19. No. 1. pp. 26-33.

Seguin returns to the curability of malaria by quinine (this *Bulletin* vol. 22, p. 810, etc.). He points out that his large dosage [about 50 grains a day for 3 days and 37·5 daily for another 7] is not extravagant, because, if not cured by one course of quinine, malarials will cost much more in drugs and loss of work. His emphatic insistence that a non-cured malaria is an ill-treated malaria serves to focus attention on the importance of his standpoint.

C. L.

Wirssaladse (S.). Zur Indikation der intravenösen Chinininjektion bei Malaria. [**Indications for Intravenous Injections of Quinine in Malaria.**]—*Ztschr. f. Klin. Med.* 1925. Vol. 101. No. 3. pp. 320-330. [20 refs.]

The indications for intravenous injections of quinine are much as are advised by others; that is to say, pernicious attacks where many subtertian parasites are found in the cutaneous blood (due regard being paid to the fact that grave illness may supervene when but few parasites are to be found there), and when other forms of administration fail; also in all re-infections and in obstinate relapses, when the subsequent improvement may be striking.

C. L.

Fidao (G.). Note sur les injections intraveineuses de quinine. [**Intravenous Injections of Quinine.**]—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 51-54.

Referring to some 2,500 intravenous injections of quinine reported by Cantlie and Moubarak (this *Bulletin*, vol. 21, p. 603) in which local reactions are unmentioned, Fidao reports some 600 of his own, and details the results of 159 others made upon 39 men. Each injection comprised 0·5 gm. Local reactions affected 20 per cent. of the patients and accompanied 13 per cent. of the injections. The vein, after one or two days, became hard and painful. In two a transverse anastomosis appeared between the cephalic and basilic veins in the upper third of the arm. General reactions have been without permanent significance. It is concluded that in grave cases the intravenous is the method of choice; that in ordinary cases it is effective, but its choice is limited by these local accidents; that in chronic cases it may form a turning point in the cure, but the local reaction will constitute a disability to a man in work.

C. L.

SEIDELIN (H.). Injections intraveineuses de solutions concentrées de quinine. [**Intravenous Injections of Concentrated Quinine Solutions.**] —*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 41-49. [11 refs.]

Intravenous injection of quinine, as quinoform or as the biyhdrochloride, was made 100 times as a test. The advantages, real or presumptive, of this method of administration are described as:—direct action in the blood (during the consideration of which point there is, it is pointed out, no evidence that quinine has a particular action on plasmodia in their extracorpuscular stage), painlessness and facility of administration without special apparatus. As objections are noted a case in which, circumvenous leakage producing no pain, the injection was persisted in, with subsequent necrosis and erysipelas; a constant temporary tachycardia; thoracic oppression; visual and other slight troubles; but particularly several cases of occlusion of the vein as noted by FIDAO, a circumstance used in the treatment of varicose veins, but which Seidelin has not seen emphasized in the literature in this connexion. Intravenous injection was not found to be a ready means of disinfestation.

C. L.

SHIRCORE (J. O.), CORSON (J. F.) & CLEARKIN (P. A.). **Experiments on the Administration of Quinine in Watery Solution and in Olive Oil.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. Feb. 18. Vol. 19. No. 8. pp. 485-487. [1 ref.]

Six experiments dealing with intravenous injections in olive oil of 0·38 to 0·68 grains of quinine sulphate per pound of body weight, eight dealing with similar injections in water of 0·1 to 0·28 (and one of 0·6) grains of quinine bihydrochloride lead to the conclusion that the latter is 2·6 times more toxic. Quinine was mixed with the olive oil by shaking in a shaker. The question of incorporation of air is not noted.

C. L.

CORDES (Wilhelm). Ein Beitrag zur Therapie der zerebralen Malaria. [**Treatment of Cerebral Malaria.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Mar. 1. Vol. 30. No. 3. pp. 99-104.

The writer emphasizes the gravity of cerebral malaria, cites in his support the textbooks of CASTELLANI and MANSON, and offers for consideration 14 cases with 11 recoveries which occurred under the following treatment. As soon as malaria is microscopically established as the cause of unconsciousness, 0·5 gm. of quinine dissolved in 10 cc. of water is intravenously injected, the process being gradual to avoid a drop in blood pressure. On account of the excitement induced the sick man must be restrained. As soon as the quinine injection is complete, the cisterna magna at the base of the brain is punctured, and as much cerebrospinal fluid as will flow is allowed to escape. This amounts to 50 or 60 cc. This process is held as easier and better than lumbar puncture because with the patient on his side the head can be held quite immovable on a hard pillow, because the fluid comes more readily, and because the cerebral pressure which represents 50 cm. of water is more rapidly relieved. If attention be paid to the moment when the needle pierces the dura mater, indicated by the overcoming of its resistance, the medulla is held safe. It must, of course, on no account be touched. The effect of this decompression is described as immediate and striking—muscles relaxed, breathing regular, normal sleep with generally a normal awakening next morning. If not, as occurred in two cases, the intravenous quinine and the puncture must be repeated. One of these two cases recovered.

C. L.

FLETCHER (William). **Further Notes on the Treatment of Malaria with Cinchona Febrifuge, Quinidine and Cinchonine.**—*Bull Inst. Med. Res. F.M.S.* 1925. No 3. 21 pp. [13 refs]

The present position of cinchona therapy is summarized. There is no world shortage of quinine, in the sense that there is cinchona bark available to a much greater extent than is being used. On the contrary, shortly before the war the market price had sunk so low that it hardly paid for cultivation, and an agreement was made between the planters and manufacturers to restrict the manufacture of quinine from bark, of which last there is a large surplus. The process of manufacture is expensive, so that most sufferers cannot afford to buy the drug at its present price. The cost, and not the need for the drug, restricts the demand. For two reasons it is not to be expected that in competition with Java quinine outturn can be economically successful. Firstly the quinine-rich *Cinchona calisaya*, and *C. ledgeriana* will not grow well in the Old World except in Java. Secondly the local experience in manufacture is unrivalled. But there is no need to restrict the horizon to quinine, for the other crystalline alkaloids of cinchona are, at least roughly, as effective as quinine. Now the hardy *C. succirubra*, although its quinine content is low, has a relatively high content of crystallizable alkaloids. The remedy is then to grow *C. succirubra*, and produce cinchona febrifuge, that is to say a preparation of the total crystallizable alkaloids. The objections to cinchona febrifuge are, partly the brown colour, partly its uncertain composition, partly its large percentage of amorphous alkaloid which FLETCHER, in definite opposition to PRAIN, holds to be toxic and malarially inert. The suggested remedy is the purchase by the Government of febrifuge in bulk once or twice yearly, and its sale in tablets, the container giving the certified composition of the substance.

Regarding the testing of effects :—There were in one hospital 15 men under treatment, each supposed to be taking 30 grains daily of quinine or of cinchona febrifuge. The urine of 5 only gave the quinine reaction. Fletcher has repeated his tests of cinchona febrifuge on malaria patients, using adequate checks. In dosage of 10 grains

Foà (Gustavo). Annotazioni sull'uso della Cinconina nella lotta antimalarica durante la stagione interepidemica nell' anno 1924-25. **[Remarks on the Use of Cinchonine in Antimalarial Work between Epidemics.]**—*Riv. di Malariologia.* Rome. 1926. Jan.-Feb. Vol. No. 1. pp. 3-24. [English summary p. 110.]

According to the English summary, cinchonine administered to 68 cases in the Pontine Marshes gave positive, but inconstant specific results, subtertian being resistant, crescents unaffected, and benign tertian malaria yielding only to doses larger than those of quinine. From the original it is, however, clear that quinine too failed in certain cases, that there were no controls, and that the conclusions may well be held unproven.

C. L.

Sergent (Et.) & Catanei (A.) Sur l'action de la quinine, de la cinchonidine et de la cinchonine données à faibles doses quotidiennes aux indigènes paludéens en Algérie. **[Action of Quinine, Cinchonidine and Cinchonine in Small Daily Doses on Malarial Natives of Algeria.]**—*Bull. Soc. Path. Exot.* 1926. Mar. 10. Vol. 19. No. 3. pp. 185-190. [1 ref.]

The writers have studied 47 malaria cases treated with 0·2 to 0·4 gm. of hydrochloride of cinchonidine, and 18 with that of cinchonine. The effects of the former are the more marked. Neither were so good as those of quinine.

C. L.

Foley (H.), Catanei (A.), Le Guillas (L.) & Brouard (M.) Sur la durée de l'action du stovarsol dans le paludisme chronique des enfants indigènes en Algérie. **[Duration of Action of Stovarsol in the Chronic Malaria of Native Children in Algeria.]** —*Bull. Soc. Path. Exot.* 1926. Feb. 10. Vol. 19. No. 2. pp. 96-100. [3 refs.]

This paper carries on observations already reported [*ante*, p. 133]. Five children have been closely studied with that care to ensure accuracy in blood examination which has already been noted. Stovarsol tablets were given for two periods of 8 days each, an interval of 10 days separating each period. The results are shown below :—

Case	Species of parasite	Month	Period of freedom from parasites.	Species of parasite appearing subsequently.
III	*P. vivax* *P. falciparum*	May	2 months	*P. vivax*, later *P. falciparum*
IV.	*P. vivax* *P. falciparum*	May	5 months	*P. vivax* *P. falciparum*
V	*P. vivax* *P. falciparum*	May	2 months and 20 days	*P. vivax*, later *P. falciparum*
VI	*P. vivax*	May	1 month and 20 days	*P. vivax*, later *P. falciparum*
VII.	*P. vivax* *P. falciparum*	May	7 months	*P. vivax*

Another group of 18 infected children was watched by quarterly examination for 5 quarters, treated with quinine till no parasites were detected, and watched by fortnightly examinations afterwards. Parasites reappeared and were present to the following extent on the dates noted: 8th December, 3; 15th January, 7; 15th February, 10; 1st March, 13. Since reinfection at that season can, it is felt, be excluded, these, and therefore presumably the stovarsol cases, were relapses.

C. L.

CIUCA (M.) & ALEXA (I.). Traitement de la malaria par le stovarsol. [**Treatment of Malaria by Stovarsol.**]—*Bull. Soc. Path. Exot.* 1926. Mar. 10. Vol. 19. No. 3. pp. 180-182.

Twenty-seven cases were treated by intravenous injection of sodium stovarsol in an initial dose of 0·25 gm, the daily quantity never exceeding 1·5 gms., and the total lying between 0·25 and 14·5 gms. There were 18 cases of infection with *P. vivax*, 1 with *P. malariae*, 6 with *P. falciparum* and 2 with the two last mixed. In 9 instances acute nephritis appeared. Schizonts of *P. vivax* disappeared after exhibition of 0·5 gms. of the drug but, unless the total quantity reached 1 gm., reappeared within 10 days. In no case did the splenic enlargement completely disappear. In the quartan case parasites remained unaffected by 3 grammes of stovarsol by mouth, but disappeared after a single intravenous injection of sodium stovarsol. On *P. falciparum* the drug had no effect at all. A daily examination, it is urged, must accompany stovarsol treatment, which must be replaced by quinine, as it safely may be, at the first sign of renal irritation.

C. L.

SPENCER (J. Heatly). **A-Malairin in the Treatment of Chronic Malaria.** —*Jl. Roy. Army. Med. Corps.* 1925. Dec. Vol. 45. No. 6. pp. 456-459.

The active principle of A-Malairin is the glucoside of dioxydiaminodiphenyldiarsenide. It was given to 8 cases of relapsing tertian malaria in intramuscular injection of 1 cc. once a week for 4 weeks, followed by a second course 3 months later. In some of the cases quinine also was given. In no case did one course, at all events, cure. The cases were selected because quinine had failed to cure them. [No evidence of the absorption of this quinine is tendered.]

C. L.

SACCHETTO (Italo). Il solfuro d'antimonio colloidale nella terapia della malaria. [**Colloidal Sulphide of Antimony in the Treatment of Malaria.**]—*Giorn. di Clin. Med.* Parma. 1925. Dec. 31. Vol. 6. No. 18. pp. 681-691. With 3 charts in text.

In 3 cases, 2 of them relapses of *P. vivax* while in the third no parasites were detected, colloidal antimony sulphide, $Sb_2 S_3$, was intravenously injected in quantity of 14 cc. of a 0·253 per cent. solution at the rate of 1 cc. a minute. Four or 5 injections were given. The drug did not cure the malaria, but the colour index of the red corpuscles improved.

C. L.

OI (T.) **On the Effectiveness of Antimonids against Malaria.**—*Taiwan Igakkai Zasshi (Jl. Med. Assoc. Formosa).* 1926. Feb. No. 251. English summary p 4. [In Japanese.]

"The author treated 17 various malarial cases (5 of tertian fever, 2 of quartan fever and 10 of tropical malaria) with an antimonial preparation called Stibnal and recommends it as very effective against fresh infections with tertian fever, while its effect against tropical malaria is not so pronounced, but even in tropical malaria it has marked effect if given in combination with quinine, especially in chronic cases, which are not benefited by quinine alone, the combined treatment with quinine and stibnal is recommended"

C L.

VAN DEN BRANDEN (F) Le Heyden "661" ou antimosan dans le traitement de la Malaria. [**Antimosan in the Treatment of Malaria.**]—*Bull. Soc Path Exot* 1926. Mar 10. Vol. 19. No 3 pp. 182–815 [1 ref]

Antimony oxide attached to a complex aromatic radicle constitutes this addition to numerically advertising pharmacy In 8 persons, schizonts persisted after a series of injections of 1 cc each The solution is neutral and painless Controls were not instituted

C. L.

MARTINDALE (W H) **Basic Quinine and other Alkaloidal Injections.** —*Lancet* 1926 Feb 27 pp 455-457 [9 refs]

" 1 A formula for a reasonably concentrated solution of quinine salt (containing 12 per cent of quinine base) is given which contains the quinine virtually in the basic condition 2 In view of the work of H Acton, T A Henry and H C Brown and others, the quinine in this form should be more potent . Animal experiments show that mannitol-quinine* is practically no more toxic than a quinine acid hydrochloride solution of similar strength 3 Mannitol quinine may be suitable for hypodermic injection, and as such or on further dilution, may be useful intravenously 4 The solutions of the majority of quinine salts are distinctly acid, whereas mannitol-quinine has the advantage of being neutral or only slightly alkaline 5 Quinine salts (and mannitol-quinine) and other alkaloidal salts, on admixture with blood serum yield the quinine and other alkaloids in basic condition to the serum and mannitol-quinine shows a larger proportion, by experiment of quinine base actually distributed 6 It may be possible to utilise mannitol or glycerin on similar lines in the case of the borates of many other alkaloids "

C L

HUGHES (T A) **The Occurrence of Urticaria in the Treatment of Malaria by Quinine.**—*Indian Med Gaz* 1926 Jan Vol 61 No 1. pp 7-9 [6 refs]

Two cases are reported In the first, clinically malaria, no plasmodia were found Twenty minutes after taking 10 grains of quinine in alkali, generalized urticaria appeared and lasted for 2 hours Subsequent administration of quinine caused urticaria, when the drug was associated with bromide or calcium lactate, but not with adrenaline After being so used, reversion to administration without adrenaline did not produce urticaria

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* Quinine base gm. 12, Boric Acid gm 8 4, Mannitol gm 7 5, Dist Water cc 100.

In the second case there was a history of generalized urticaria, appearing on the onset of any acute illness, and aggravated by quinine. When first seen, the blood contained numerous subtertian rings; urticaria was aggravated when sweating occurred and when quinine was taken. Adrenaline was ineffective to relieve, while 30-grain doses of calcium lactate appeared to do so The rash disappeared on the fourth day, quinine being apparently persisted in

C. L.

ADSHEAD (G P) **A Case of Acute Cinchonism.**—*Jl Roy Nav Med. Serv* 1926 Apr Vol 12 No 2 pp 145-147

A man of 25 was admitted to hospital with complete blindness of 2 hours duration *P vivax* had been found and he had been given 200 grains of quinine sulphate, at first at the rate of 120 grains daily, with an equal quantity of potassium bromide On admission he had diarrhoea and his blood contained *P vivax*, the discs were pale, the retinal vessels contracted, and the pupils widely dilated and almost inactive to light Later the discs became choked, and the retinal vessels dilated In course of time vision became physiological and of high standard Incidentally his mouth, in the early days, became extremely septic, and a parotid abscess developed

C L.

DUNDAS (J D) & TELANG (D M) **On the Inefficiency of "Mercurochrome 220" in the Treatment of Malaria.**—*Indian Med. Gaz.* 1926. Mar Vol 61 No 3 pp 116-117

"Conclusions—(1) Mercurochrome 220 has no effect on malarial parasites, even after 2 doses, as in cases Nos 1 and 3, as shown by blood examination after the reaction following upon its administration.

"(2) Stomatitis and ptyalism were marked features in every case

"(3) The drug appears to irritate the kidney tissue to the extent of producing mild nephritis, as was shown by examination of the urine in every case

"(4) It will be seen that this much-vaunted drug, which has been hailed as a veritable panacea—especially by some American physicians—in malaria, does not in any way affect the dominant position of quinine as a specific for malaria"

C. L.

MORIN (Henry G. S). Action de la quinine sur les schizontes de *Pl malariae.* [**Action of Quinine on the Schizonts of** *P malariae.*] —*Bull Soc. Path. Exot.* 1925. Nov. 11. Vol. 18. No. 9. pp. 710-715. With 2 text figs.

The number of quartan parasites found in 200 fields of a fixed size was enumerated, and their disappearance under rest in bed and under quinine (1·5 gm daily divided into three doses) were severally noted, an important matter since the marked effect of the former seems so often to be overlooked. An effort was then made, by enumerating the forms of different stages of the cycle, to determine whether quinine acted on intracorpuscular stages, on the principle that the vulnerability of each stage will be indicated by the order of its disappearance. The counts of the different stages are charted, but since it is not stated whether the infections were single, nor to what period of the cycle the various parts of the charts apply, it is difficult to appraise the result. It is at least certain that quinine caused an immediate lowering of the number of circulating parasites, and that they had almost disappeared on the third day of treatment

C. L.

ROBINEAU (M) Dosage instantané de la quinine dans l'urine à l'aide d'une échelle opacimétrique étalonnée **[Prompt Quantitative Determination of Quinine in Urine by means of a Standardized Opacimetric Scale.]**—*Bull Soc Path Exot* 1925 Dec 9. Vol 18 No 10 pp 773-774

Urines are arbitrarily divided into 6 shades of colour For the making of a permanent scale these are simulated by "glyzine" solutions of varying strength For the same purpose the opacity of Tanret's reaction is obtained by adding milk, and the whole is then solidified by gelatin and sterilized The opacities obtained correspond to quinine strengths of 1/10,000, 1/20 000 1/50,000, 1/75,000, 1/150,000 There are then 30 tubes, and against one of them the quinine content of the urine is immediately determined

C L

COCHRANE (T S) & ALLEN (G V) **A Rare Form of** *Plasmodium vivax* —*Kenya Med Jl* 1926 Mar Vol 2 No 12 pp 344-345

A European infant living 8 months in Nairobi and Thika, 3 in England and 2 in San Remo, Italy, where he was bitten by mosquitoes, was ill for the first time in his life on reaching Kenya at 16 months old Of the parasites found 92 per cent were, to Leishman's stain, typical of *P vivax* The rest are described thus —

> "The parasites were roughly oval in shape with regular outline The protoplasm stained a uniform fairly deep blue except around the nuclear body, where there was a well defined narrow area of protoplasm staining a lighter blue The nuclear body was situated to one side the chromatin staining deeply Fairly coarse pigment granules were scattered uniformly throughout the more intensely staining protoplasm, but were not present in the lighter area around the nuclear body The parasite was solid The host cells showed a slightly greater enlargement than was shown by the cells invaded by the typical parasites Well developed Schuffner s dots were present in the host cells'

They are held to be identical with those shown in THOMSON and WOODCOCK S section of BYAM and ARCHIBALD S "The Practice of Medicine in the Tropics," vol II p 1,540, and Pl LXIV, figs 54 to 57.

C L

DELAMARE (G) & DJÉMIL (Saïd) Formes anormales de *Plasmodium vivax* **[Abnormal Forms of** *P vivax* **]**—*C R Acad Sci* 1926 Jan 11 Vol 182 No 2 pp 178-180

That the infection was with *P vivax* is held established by the tertian periodicity, by the general hypertrophy of erythrocytes, by the presence of Schuffner's dots, by the character of the rings and the absence of small ones, and by the absence of crescents The host was an apyrexial pregnant woman Nuclei were spherical, star-shaped, pear-shaped, boat-shaped, or like a straight or bent rod Multiple nuclei were alike or dissimilar.

C. L.

LAL (R. B.). **The Relative Number of Male and Female Crescents. (Preliminary Note.)**—*Indian Jl. Med. Res.* 1925. Oct. Vol. 13. No. 2. pp. 265-270. With 1 chart in text. [3 refs.]

Counts of 4,600 crescents from 25th September to 17th December, and the plotting upon the same chart of observations by others, leads to the suggestion that the ratio of male to female crescents (varying from 1 to 10 in KNOWLES's reported cases to 1 to 1·07 in one of LAL's cases) is a seasonal matter. For the portion of the year covered, the highest percentage of males is in October and the lowest in December.

C. L.

IOFF (J.). Ein Versuch der Kultivierung der Malariaplasmodien. [**The Cultivation of Malaria Parasites.**]—*Russian Jl. Trop. Med.* Moscow. 1925. No. 1-2-3. German summary pp. 71-72. [In Russian pp. 25-32. With 1 plate. 12 refs.]

"*Plasmodium immaculatum*" was cultivated 16 times, *P. vivax* 4 times and *P. malariae* once. Increase in the quantiy of dextrose advised by BASS gave negative results. Omission of the centrifuging of the blood and of the removal of leucocytes did not disturb development. Anaerobic conditions were found to be unnecessary, for development took place as, or more, readily when the layer of serum was only 2 to 4 mm. high—indeed, on shaking the tube so that the whole showed the colour of oxyhaemoglobin, development took place throughout the culture, and not merely in the upper layer. During the first 24 to 48 hours the reaction of the culture changes from weakly alkaline to neutral or weakly acid. For "*P. immaculatum*" the pigment collects very suddenly. The parasite lies in the periphery of the corpuscle. Division into 16 to 18 merozoits takes place at any period up to 6 days.

C. L.

MIKELADSE (Sch.). [Zur Frage der Viskosität und Gerinnungszeit des Blutes bei Malaria.] [**Viscosity and Coagulation Time of the Blood in Malaria.**]—*Nachrichten der Universität.* Georgisch. 1924. Vol. 8. p. 169. [Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Feb. 1. Vol. 30. No. 2. pp. 87-88.]

The viscosity of the blood is lessened in 83 to 85 per cent. of infections with any of the 3 species of malaria parasite, particularly in severe attacks and in subtertian malaria. The lowest point is reached during sweating; treatment raises it. Viscosity of the serum is normal in 71·43 per cent of cases. Clotting, during apyrexia, is normal in 40 to 45, accelerated in about 32 and delayed in about 26 per cent. of cases. During fever it is generally accelerated.

C. L.

BOREL, PONS, ADVIER & GUILLERM. Cholesterinémie et glycémie dans le paludisme en Cochinchine. [**Cholesteraemia and Glycaemia in Malaria in Cochin China.**]—*Ann. Inst. Pasteur.* 1926. Feb. Vol. 40. No. 2. pp. 152-160. [10 refs.]

The blood tests for cholesterin and glucose are described. The normal quantity of cholesterin in serum in France is placed by GRIGAUT as 1·65 grammes per litre. In Cochin China it is less in malaria cases, irrespective of age or race, but not of sex, for in females the average was 1·13 grammes and in males 0·83 For *P. falciparum*, *P. vivax* and *P. malariae* it was 0·93, 0·89 and 0·9 respectively. One of the smallest values was that of a *P. vivax* case drawn when the temperature was 40° C. For glucose, GRIGAUT's normal figure is about 1 gramme per litre ; for Cochin China it is 0·69. In *P. falciparum* it has reached 4.35, and for *P. malariae* the average was 0·7. In most malaria cases glucose and cholesterin diminish together.

C. L.

BIGNAMI (A.). Quelques observations sur la pathologie du paludisme. [**Remarks on the Pathology of Malaria.**]—*Semana Médica.* 1926. Feb. 25. Vol. 33. No. 8. (1676). pp. 424-426.

It has been maintained that certain inflammatory lesions found in malaria must be of malarial origin because no other micro-organism has been found. Epidemic meningitis, it is pointed out, has this feature. The lesions of malaria, it is insisted, are not inflammatory ; they are necrotic and proliferative. In the brain, for instance, round an arteriole blocked with parasites and pigment, lies a necrotic area surrounded by a ring of haemorrhages from surrounding vessels. Such lesions may be found in the part of the brain where they would be expected from the symptoms during life. Tumours of liver and spleen are not inflammatory. An acutely enlarged liver shows : first, congestion with some necrosis of the parenchyma ; then, a perilobular melanosis ; by repetition of the process, some increase of interlobular tissue ; on recovery, abstraction of pigment ; in cachexia, atrophy from progressive anaemia. Inflammatory lesions, if present, can only be due to some cause other than malaria.

C. L.

MÜHLENS (Peter). Transportables Malaria-Laboratorium für Expeditionen. [**A Portable Malaria Laboratory.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Apr. 1. Vol. 30. No. 4. pp. 166-169. With 3 text figs.

The writer describes and illustrates a portable laboratory fully equipped for malarial, epidemiological, and entomological research, and packed in two boxes each weighing less than 30 kilos. Each is a man's load, the two are a mule load, and the packages can be taken as hand luggage on train or by road. They are made by F. Bergmann (Leitz), Berlin.

C. L.

YORKE (Warrington). **An Address on the Malaria Treatment of General Paralysis of the Insane.**—*Lancet.* 1926. Feb. 27. pp. 427-431. [17 refs.]

This paper deals partly with GERSTMANN's recent monograph [*ante*, p. 496] and partly with the author's work already abstracted [this *Bulletin* vol. 22, p. 50 ; vol. 23, p. 148]. Of 400 general paralytics, treated by *P. vivax* infection at Vienna previous to 1923, and so with at least 2 years of subsequent observation, 33 per cent. showed complete mental remission—that is to say cure—15 per cent. partial remission, and 52 per cent. slight change, no change, or death. It is at present impossible to forecast individual mental prognosis; in general the earlier the treatment the better; more value attaches to clinical manifestations than to body fluid reactions. The first effect of malarial treatment is evidently an acute increase in the infiltrative and proliferative processes which have occurred in the vessels and glia. Thereafter the infiltration lessens till, after years of mental remission, the lesions may become so slight that a diagnosis of general paralysis could not be based on them.

Regarding malaria, Warrington Yorke emphasizes the following points in his own work: the untenability of the unicity theory; the appearance of gametes either, but very rarely, as soon as trophozoits, or at all events 2 or 3 days later; the failure of quinine as a prophylactic and destroyer of sporozoits; the easy cure of these primary cases; the suggested mechanism of cure, the dangers of over-administration of quinine.

C. L.

NONNE (M.). Meine Erfahrungen ueber die Malaria-Behandlung der Paralyse. [**Experiences of the Malaria Treatment of G. P.**]—*Med. Klin.* 1925. Dec. 4. Vol 21. No. 49. pp. 1829-1832. With 3 text figs. [41 refs.]

Those investigated numbered 450 paralytics and 30 tabetics. Although a quartan infection was used, the main agent was the tertian parasite. In four cases it became contaminated by *P. falciparum* on passage through one who had been in the tropics. All four died. Marked insistence is accordingly expressed that none should be used as a donor who has been in the tropics, that daily blood examinations must be made, and that none should be discharged until free from observed parasites for three weeks. As usual [and in contrast to MRAS's cases, *vide infra* p. 556] the clinical manifestations were most varied, so that while one had high fever and collapse, another's fever ran a mild course. The nervous betterment was not necessarily proportional to the height of the fever. NONNE notes that, for those with little resistance, WAGNER VON JAUREGG divides the malaria treatment into 2 phases with some weeks interval, or lowers the temperature with a single dose of 0·25 gm. of quinine, and uses intracutaneous injection whereby the quotidian type of fever is avoided.

C. L.

KAUDERS (Otto). Zur Technik der Wagner-Jauregg'schen Malariatherapie in der Praxis. Ueber Malariablutkonservierung. [**The Technique of Wagner-Jauregg's Malaria Therapy. Preservation of Malarial Blood.**]—*Seuchenbekämpfung.* 1926. Vol. 3. No. 1. pp. 18-23. [11 refs.]

While noting that finality has not been reached on the matter, the three following methods of preserving malarial blood in a condition fit for travelling are described.

i. *Sodium citrate.*—In a test tube, malarial blood (5 cc.) is mixed with an equal quantity of 0·5 per cent. sterile sodium citrate solution.

ii. *Blood agar.*—In a small flask, malarial blood (10 to 15 cc.) is defibrinated with glass beads and decanted into a test tube holding a fresh, thoroughly mixed, blood agar slope, in amount which will not overtop the slope.

iii *Gelatin*.—In a test tube, malarial blood (2 cc.) is mixed with 10 cc. of Merck's purest gelatin—which melts after a few minutes in a water bath at 30° C.—and is shaken strongly for some minutes. The whole will solidify in a few minutes on ice, or in 15 to 30 minutes at room temperature.

In all cases the tube is not filled, is closed by an indiarubber cork, and sealed with melted paraffin. Carefully packed, the tubes are sent by post. For injection the citrated blood is taken direct into a sterile syringe. Agar blood is poured into a glass dish and the upper layer drawn into the syringe, so avoiding blocking the needle by minute detached particles of agar. Gelatin blood is melted throughout at 28° C, *and no more*, and carefully mixed. Subcutaneous injection, with scarification, is used.

C. L.

O'LEARY (Paul A.), GOECKERMAN (William H.) & PARKER (Stephen T.). **Treatment of Neurosyphilis by Malaria. A Preliminary Report.**—*Arch. Dermat. & Syph.* 1926. Mar. Vol. 13. No. 3. pp. 301-318. [23 refs.]

Of 22 general paralytics infected intravenously or intramuscularly with *P. vivax*, 25 per cent. showed complete remission, returning to their former occupations within 2 months of cure of the malaria; 37 per cent. were improved. One man died from the malaria, and one from convulsions 6 months later. In 4 cases the malaria ceased spontaneously; in two the first injection failed to produce evident infection although the second did so. The treatment was 2 courses of quinine lasting a week each and consisting of 2 five-grain doses daily, followed by 2 similar courses of 3 days duration, a quinine free week separating each course. Apparently no relapses occurred.

C. L.

MRAS (Fritz). Ueber den Verlauf der Impfmalaria. [**The Course of Inoculation Malaria.**]—*Wien. Klin. Woch.* 1926. Jan. 21. Vol. 39. No. 4. pp. 101-102.

A hundred cases of malaria conveyed by injection (generally subcutaneously, later in combination with scarification, and occasionally intravenously) gave incubation periods of from 2 to 12 days. Great stress is laid upon the extraordinary regularity with which a 41-hour interval was established from maximum to maximum, so that when pinned below one another the curves on the charts corresponded, the periodicity being tertian. Only on 3 occasions was it quotidian and even then, by dying out of one generation, it became tertian. In 52 per cent. of the cases, spontaneous cessation of fever occurred, on the average after 8 attacks, either suddenly or gradually, not to reappear even after provocative injections of sodium nucleinate. Two grammes of quinine divided between 4 intravenous injections was followed by no relapse.

C. L.

FRIBOURG-BLANC (A.). Le traitement de la paralysie générale par les chocs infectieux (paludisme, fievre récurrente). [**Treatment of G. P. by Malaria and Relapsing Fever.**]—*Paris Méd.* 1925. Dec. 5. 15th Year. No. 49. pp. 484-492. [35 refs.]

For the benefit of French medical men (only 85 cases of the treatment of general paralytics by malaria in France had hitherto been reported)

Fribourg-Blanc makes a valuable résumé of facts well known to readers of this *Bulletin* and records 4 cases. The deliberate carrying over of malaria by mosquitoes, the practice in England, is not mentioned.

C. L.

MARIE (A.) Rapport sur la malariathérapie en psychiatrie. [**Malaria Therapy in Psychiatry.**]—*Semana Médica* 1925 Dec. 31. Vol 32. No. 53 (1668) pp 1641-1650. [79 refs.]

This paper has little of malarial interest, but for the scientific worker the historical introduction is pregnant. In 1836, ESGUIROL drew attention to the connection between intercurrent fever and the cure of chronic mental cases In 1857 BAILLARGER showed, at the Académie de Medécine, general paralytics cured by erysipelas or phlegmon. In England it was shown that non-suppurative aseptic inflammation did not cure general paralysis. In 1887, WAGNER VON JAUREGG considered the possibility of curing these cases by erysipelas or malaria, in 1904 he employed pyretic agencies, not necessarily microbic or infectious, in 1917 he returned to his idea, struck by researches of MATTAUSHEK and PILCZ on 4,134 syphilitic Austrian officers of whom 4·7 per cent became paralytic, but in no case had this occurred where there had been intercurrent erysipelas or any other febrile malady. It is to this steady pursuit of a reasoned idea that mankind owes a completely altered outlook for the general paralytic and a marked advance in malarial knowledge

C L.

DREYFUS (G L) & HANAU (R) Ueber Fieber-, insbesondere Malariabehandlung der multiplen Sklerose [**Malaria Treatment of Multiple Sclerosis.**]—*Deut Med Woch* 1926 Feb 26 & Mar 5 Vol 52 Nos 9 & 10 pp 354-356, 391-394 [1 ref.]

Twelve cases were treated with a tertian strain which had run through 60 passages. Except for one case, intramuscularly injected, with an incubation period of 14 days, infection was transferred by intravenous injection of 2 to 5 cc of infective blood, with an incubation period between 4 and 11, generally between 5 and 7 days Quotidian or tertian manifestations appeared, irrespective of the donor's type of fever. It is held that fever may be checked, if desired, for periods up to 9 days by giving for 2 days, 2 or 3 times a day, 0·1 gramme of quinine, no quinine on the third day, and restarting the process on the fourth The paroxysms were terminated by giving 0·2 gm of quinine 5 times daily for 5 days, fever ceasing in 24 to 48 hours.

C. L.

NICOLE (J Ernest) & STEEL (John P). **Acquired Immunity to Malarial Inoculation.**—*Jl. Trop. Med & Hyg* 1925 Dec 1. Vol 28. No 23 pp 428-429

In 14 of at least 102 general paralytics, who had not shown sufficient mental or physical benefit from a first, deliberately induced, malarial infection (which had been terminated by treatment at least 6 months earlier) reinfection was attempted on 26 occasions by intravenous or intramuscular injections of malarial blood, or in 1 case by malarially infected mosquitoes. As controls, hitherto non-infected persons were in all cases injected from the same syringeful of blood as were these attempted reinfections. All but one of the noninfected cases became infected, while none of the previously infected became reinfected. All the primary infections were terminated by quinine administered "until the blood was definitely negative to microscopic examination." Eight relapsed. No relationship between the blood classification of donor and recipient was traceable. All but 2 [the Table shows one] have shown change in the cerebrospinal fluid.

C. L.

NICOLE (J. Ernest) & STEEL (John P.). **Further Report on Acquired Immunity to Malarial Inoculation.**—*Jl. Trop. Med. & Hyg.* 1926. Feb. 1. Vol. 29. No. 3. pp. 48-49.

Two cases of general paralysis, refractory to intravenous inoculation of the Winwick strain of *P. vivax,* were at once infected by JAMES's infected mosquitoes. A third case, originally mosquito infected, did not react to a subsequent mosquito infection, an intramuscular, or an intravenous injection. After another infected mosquito had fed upon him, parasites were found in the blood, but no clinical evidences of infection were present. Three other cases, refractory to injection by the Winwick strain, were infected by a new one.

C. L.

KÜHNHOLD (Grete). Abnorme Formen von Malaria tertiana-Parasiten bei Impfmalaria. [**Abnormal Forms of Tertian Parasites in Inoculation Malaria.**]—*Cent. f. Bakt.* I. Abt. Orig. 1926. Mar. 1. Vol. 98. No. 1-2. p. 113. With 1 text fig.

In a paralytic infected from a strain of *P. vivax* which had already had 3 direct passages, there appeared, among typical tertian forms, segmenting forms more than half of which were of daisy rather than mulberry pattern, and with 6 to 10 spores. Sexual forms were not detected with certainty. The possibility of a mixed tertian and quartan infection is mentioned.

C. L.

BACHMANN (Franz). Spontane Ruptur der Milz bei Impfmalaria. [**Spontaneous Rupture of the Spleen in Inoculation Malaria.**]—*Muench. Med. Woch.* 1926. Mar. 26. Vol. 73. No. 13. pp. 528-530. [10 refs.]

Bachmann cites 4 cases of spontaneous rupture of the spleen after injected malaria, and describes from his own practice a fifth occurring in a man of 47 with commencing general paralysis. He had received intramuscularly 5 cc. of tertian blood; after an incubation period of 23 days a typical malarial attack occurred with many plasmodia in the cutaneous blood, and the spleen became palpable. Next day the temperature rose sharply without rigor, falling to normal at night. At 6 next morning he got out of bed to use the night stool, and in a few minutes was dead. The rupture was in this case an extensive one, lying at the lower pole.

C. L.

ADELHEIM (R.). Zur pathologischen Anatomie der Impfmalaria bei progressiver Paralyse. [**Morbid Anatomy of Inoculation Malaria in General Paralysis.**]—*Wien. Klin. Woch.* 1926. Apr. 8. Vol. 39. No. 15. pp. 412-416. [11 refs.]

Sixty cases were intravenously injected with one of two strains of *P. vivax*, with incubation periods of from 11 to 14 days. One proved refractory. In direct conjunction with the treatment, 6 persons died, 2 of them as the result of ruptured spleen. The organ was, in one, so disorganized as to be unsectionable; in the other there was extraordinary hyperaemia and hyperplasia of the pulp, with many polymorphonuclear leucocytes, pulp cells and endothelial cells with much protoplasm. Pigment, haemorrhages, broken up red corpuscles and clumps of streptococci were added to the picture. Sepsis was, then, added to malaria. It is noted that in Riga, whence the report comes, the deaths of paralytics not infected with malaria are from pneumonias, cystitis, pyelonephrosis, fractures and " decubitus," and that malarial infection predisposes to these.

C. L.

RUDOLF (G. de M.). & RAMSAY (J. C.) **Erythrocytosis in Artificially-Inoculated Malaria.**—*Ann Trop. Med. & Parasit.* 1925. Dec. 16. Vol. 19. No. 4. pp. 419-428. With 4 charts. [8 refs]

In 4 cases of general paralysis inoculated with benign tertian malaria an erythrocytosis preceded the anaemia. It was independent of mode of injection, sex, and history of previous malaria. Regeneration was complete within three weeks, irrespective of the degree of anaemia, and a second erythrocytosis ensued. Haemoglobin followed the red cells, with a colour index however as low as 0·5, and regeneration was less rapid and the amount did not over-reach normal as with the red cells.

C. L.

HEINEMAN. Ueber die Malariabekämpfung [**Anti-Malarial Measures.**] —*Seuchenbekämpfung.* 1926. Vol. 3. No. 1. pp. 35-46. With 7 charts in text. [6 refs.]

Stress is laid upon papers by RODENWALDT (this *Bulletin*, vol. 22, p. 58) and WALCH (l.c. vol. 21; p. 607). It is pointed out that a malarial campaign must make use of the established means of investigation, namely, the haemoglobin, parasite, and spleen indices, but should add to these the determination of the species of anopheles concerned as transmitter, of the number of its females infected, and of the breeding places it uses.

The work now reported is a continuation of WALCH'S; the country is a rice growing one, suitable accordingly for the breeding of *A. sinensis.* WALCH, it will be remembered, found buffaloes more attractive to mosquitoes than is man, and for their collection and destruction used mosquito traps attached to the buffalo byres. There has been a heavy local increase in malaria; the percentage infection of *A. sinensis* has been between 10 and 20; this mosquito, presumably on account of the care taken of the rice fields, breeds now in water heavily contaminated with urine and faeces; there has been an entire disproportion between the catches of larvae and the catches of females in the traps attached to the byres; but when collection of this species became confined to dwellings, the parallelism between larval and adult catches was re-established. For the female *A. sinensis* buffaloes have not, accordingly, proved an effective counter-attraction to man. Thorough quinine treatment, accompanied by this species-sanitation, has greatly improved health, but, it is pointed out, the situation demands continual watchfulness.

C. L.

CELLI-FRAENTZEL (Anna). Malariabekämpfung in der römischen Campagna. **[Malarial Campaign in the Roman Campagna.]**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Dec. 16. Vol. 29. No. 12. pp. 675-685.

For many years her husband's co-worker, the widow of Angelo CELLI recounts the result of her labours in the worst part of the Roman campagna. Perhaps the most significant part of the paper consists of two tables showing the first and subsequent malarial attacks amongst those who had, and had not, taken prophylactic quinine. The period covers 4 years. The ordinary dosage, given by nurses, was 0·6 gm. (10 grs.) daily of quinine bisulphate or 0·4 gm. of bihydrochloride, but for certain cattle herds from the hills it had, in the autumn, to be increased to 1 gm. Regarding those who took this prophylaxis: of 1,612 who had never had malarial attacks, the incidence of such attacks was 3·2 per cent.; while among 3,538 who had previously had attacks it was 10·4 per cent. Regarding those who refused to take quinine: among 162 who had had no previous attack 29 per cent. showed such within the period of observation; while among 793 who had, the percentage was 53. The result surprised Professors GRASSI and MARCHIAFAVA, and converted the former from a dissenter from such prophylactic issue to an ardent advocate. Readers of the original should not omit the smaller type, which contains matter essential for the following of the argument.

C. L.

i. SWELLENGREBEL (N. H.). Considérations sur la prophylaxie du paludisme par la déviation des anophèles. **[Malaria Prophylaxis by Anopheles Deflection.]**—*Bull. Soc. Path. Exot.* 1925. Nov. 11. Vol. 18. No. 9. pp. 725-727. [9 refs.]

ii. ROUBAUD (E.). Peuplements humains et peuplements animaux comme facteurs économiques comparés de la déviation anophélienne antipalustre.—*Ibid.* pp. 728-730.

i. ROSS, it is pointed out, has concluded on mathematical grounds that with a constant number of anopheles an increase in the human population will dilute human and lessen anopheline infection, provided that the added supply of food does not add to the numbers of anopheles. BENTLEY has based conclusions on Ross's foundation without considering Ross's proviso. Swellengrebel points out that the effect of cattle in this matter, urged by ROUBAUD, is explicable as causing exactly the same effect as that contemplated by Ross, with the added advantage that cattle do not become infected, and without any suggestion of the production of a zoophil race of mosquitoes.

ii. Roubaud dissents from SWELLENGREBEL'S conclusions, pointing out that the protective rôle of animals is threefold, dilution of anopheline infection, dilution of human infection, progressive sterilization of infected anopheles by the destruction of those sporozoits which are injected into animals. He inquires whether the infection of anopheles in Holland during the winter only, when mosquitoes are hibernating in human houses and cannot be attracted by animals, is not evidence of the superior attraction of animals for anopheles. C. L.

ROUKHADZÉ (N.). Un exemple de l'influence de la stabulation des animaux sur la diminution du paludisme, en Géorgie. [**Influence of Stabling of Animals on the Decrease of Malaria in Georgia.**]—*Bull. Soc. Path. Exot.* 1926. Feb. 10. Vol. 19. No. 2. pp. 100–105. [2 refs.]

There are in this district three villages situated under like topographical conditions: Estonka, inhabited by Esthonians, where houses are of masonry and of European standard, the people well nourished, often taking quinine, developing milk production, making an independent living thereby, and housing their cattle near their dwellings; Wladimirovka, inhabited by Russians who act as labourers on the land; Nikolaevka-Anastaceoka, inhabited by Georgians, who carry on rural cultivation, and live in huts described as full of holes and draughts. Neither of the last two villages stable their cattle. It is concluded that this stabling of cattle in Estonka completely explains its low splenic index, and it is noted that anopheles were found in the stables of Estonka, but not in the neighbouring houses, and also that, it being autumn and cold, there were but few at all. [Their distribution in the Georgian houses at all seasons, and the relative distribution between stables and houses in Estonka at the season of presumed infection, are apparently still unknown.] C. L.

WALRAVENS (P.). Stérilisation des réservoirs de virus malariens. [**Sterilization of Malaria Carriers.**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 201-204.

Continuing his investigations [this *Bulletin* vol. 21, p. 600] Walravens gave to the children concerned a "curative" treatment over 3 days, with the daily dosage (administered in two halves) below indicated, in order by so doing to remove all schizonts from the peripheral blood—presumably to examination of a single film. He found that for children under 5 he had to give 1 gramme [15 grains] to effect this. Having done so he continued quinine, in the prophylactic doses displayed in the Table, which, however, as will be noted, did not prevent reappearance of schizonts. In none of these 110 children were crescents to be found after the prophylactic course, although they were present in 10 per cent. after the curative one. Their disappearance is of course, of marked prophylactic significance. The failure to remove schizonts from the peripheral blood is attributed to a 30 per cent. anopheline infection, to administration of quinine in the morning instead of the evening, and to some lack of discipline. The dosage indicated is in grammes.

Age in years.	Percentage with parasites.	Curative dose of quinine daily for three days.	Percentage still having parasites.	Curative dose daily for three days.	Percentage still having parasites.	Preventive dose daily for three months.	Percentage infected after three months.
1—5	95·3	0·75	24·6	1	0	0·1	12·7
5—10	94·9	1	0	1	0	0·2	8·1
10—15	90	1·5	0	1·5	0	0·25	20

C. L.

BARBER (M. A.). **Quinine as a Preventive of Malaria: a Review of some Recent Literature.**—*New Orleans Med. & Surg. Jl.* 1926. Feb. Vol. 78. No. 8. pp. 530-534. [9 refs.]

The literature in question has already been abstracted in this *Bulletin*. Barber writes : " From the evidence before us one deduction seems clearly justified : Preventive quinine, however faithfully administered, cannot be depended on to prevent infection . . . Quinine is preventive chiefly, if not wholly, through its action on an infection already acquired. . . . We must have controls and a most careful analysis of our findings if we are to draw any valid conclusions from our observations." How much smaller and more useful this *Bulletin* would be if all workers committed that last sentence to memory.

C. L.

FALCIONI (Domenico). Per una esecuzione sempre più razionale della profilassi, specie chininica, della malaria. [**A More Rational Quinine Prophylaxis of Malaria.**]—*Policlinico*. Sez. Prat. 1926. Mar. 8. Vol. 33. No. 10. pp. 338-342.

It is urged that malarial distribution is almost always focal even when most intense ; that anopheles are lovers of one restricted locality from which their radius of movement is slight, affecting, for instance, their likelihood of reaching the various storeys of one house, or neighbouring houses ; that they do not readily move thence and infect others. as witness the finding by GRASSI and SELLA that of 147 specimens caught in a dormitory 15 were infected, while of 105 captured in a neighbouring stable none were. The inference is that quinine prophylaxis should be directed to foci of infection, the drug being given, according to the intensity of infection, in doses of 0·2 to 0·6 grammes.

C. L.

THIRUPAD (R. K.). **The Rôle of Quinine as an Anti-Malarial Measure.** —*Madras Med. College Mag.* 1926. Jan. Vol. 5. No. 3. pp. 220-223.

In a plantation in Southern India, " admittedly the worst in the district," and having a spleen rate of 75, all cases of enlarged spleen were given 6 grains of cinchona febrifuge, with iron and arsenic, daily for three months before the fever season. During the fever season this régime was extended to the whole labour force. The results are described as satisfactory.

C. L.

i. MEISSNER (Kurt) Die Wirkung der Impfmalaria auf den Liquor cerebrospinalis der Lueskranken. [**Effect of Inoculation Malaria on the C.S.F. of Syphilitics.**]—*Dermat. Ztschr.* 1925. Dec. Vol. 46. No. 1. pp. 8-25. [35 refs.]

ii. FORSTER (E.). Spirochätenfunde bei mit Malaria behandelten Paralytikern. [**Spirochaetes found in Malaria-treated Paralytics.**]—*Muench. Med. Woch.* 1925. Dec. 18. Vol. 72. No. 51. pp. 2197-2200. With 4 text figs. [6 refs.]

GERSTMANN (Josef). Spirochätenbefunde bei mit Malaria behandelten Paralytikern. Bemerkungen zum gleichnamigen Aufsatz Prof. E. Forsters in Nr. 51 der M.m.W. vom 18 Dezember, 1925.—*Ibid.* 1926. Mar. 12. Vol. 73. No. 11. pp. 436-437 [4 refs.]

iii. RODENWALDT. (Ernst). Internationale Untersuchungsnormen für die Beurteilung einer malariainfizierten Bevölkerung. **[International Standards of Investigations in the Study of a Malarial Population.]**—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Vol. 30. No. 1. pp. 43-56.

iv. NOCHT (B.) Ueber Erfahrungen bei Malaria-Studienreisen in Europa **[Experiences of Malaria Study Tours in Europe.]**—*Ibid.* pp. 1-17.

v. DHAIRYAM (J.) **Notes on Malaria in the Agency Tracts, Madras Presidency.**—*Indian Med. Gaz.* 1926. Jan. Vol. 61. No. 1. pp. 9-10.

vi. JHAVERI (Madan H.). **The Gastro-Intestinal Type of Malaria.**—*Ibid.* p. 26.

vii. SCHRUMPF-PIERRON (P.) & PAGNIER (A.). De l'importance diagnostique et thérapéutique des accès algides de paludisme **[The Diagnostic and Therapeutic Importance of Algid Attacks of Malaria.]**—*Presse Méd.* 1925. Dec. 9. Vol 33. No 98. pp 1618-1619. With 4 charts in text.

i. Energetic antisyphilitic treatment with salvarsan, mercury, and bismuth has no good effect on the cerebrospinal fluid; but malaria gives improvement in all and induces normality in some, the change being marked in early cases. The heart must be watched in elderly persons.

ii. In two of three paralytics, who had been treated by malaria without mental benefit, spirochaetes were found on dark ground illumination of material obtained by puncturing the forebrain by Neisser-Pollack's method.

iii. The established methods for determining malarial incidence are discussed.

iv. The tour of the Malaria Commission of the League of Nations is summarized for German readers. An interesting point brought out is that visceral leishmaniasis, thoroughly established by splenic puncture, is widely endemic in Spain, and that cases of cutaneous infection are numerous.

v. For cerebral malaria the writer advocates 10-grain, daily intramuscular doses of quinine, and believes that intravenous injections increase collapse.

vi. Five cases of "malaria," with severe abdominal pain and tenderness, vomiting, constipation, high fever and, later, collapse, were cured by intramuscular injections of quinine. Five hundred such injections have given no untoward results.

vii. The writers elaborate their thesis (this *Bulletin* vol 22, p 806) and stress, what will presumably be generally admitted, that great anaemia may result from cryptic infection, such persons being infectious and difficult to cure.

C. L.

i. BAYLEY-DE CASTRO (A.). **The Vagaries of Malaria. The Hepatic Type.**—*Indian Med. Gaz.* 1926. Jan. Vol. 61. No. 1. pp. 25-26.

ii. FOSSATI (V.) & SALVO (C.). **[Tertian Malaria with a Long Latent Period.]**—*Rev. Sud.-Amer. de Endocrinol.* 1925. Dec 15. p. 871. [Summarized in *Brit. Med. Jl.* 1926. Mar. 6. (Epitome of Current Med. Literature) p. 41.]

iii. DE LEMOS (Bento). Nevralgias paludicas do trigemeo. **[Malarial Neuralgia of the Trigeminus.]**—*Arch. Brasileiros de Med.* 1925. Dec. Vol. 15. No 12. pp. 777-781.

iv. GOEBEL (Carl). Malaria und Splenektomie. (Eine literarische Studie.) **[Malaria and Splenectomy.]**—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Vol. 30. No. 1. pp. 31-41.

v. GOJCHER (B) Die Ausscheidung von Amylase mit dem Harne bei Malariakranken —[**The Excretion of Amylase in the Urine of Malaria Cases.**]—*Russian Jl Trop Med* Moscow 1925 No. 1-2-3. German summary p 73 [In Russian pp 51-52 5 refs]

vi SCHABASCHOV (D) Die Sphygmographie bei Malaria [**Pulse Tracings in Malaria.**]—*Ibid* German summary p 71 [In Russian pp 13-19 With 9 charts in text]

vii PERNET (George) **Malaria as a Therapeutic Agent.** [Correspondence]—*Lancet* 1925 Dec 5 p 1197 [1 ref]

i A case showing subtertian parasites, no *Entamoeba histolytica*, an enlarged and tender liver, a board-like abdomen, and leucocytes to 13,000 was cured by emetine, quinine and arsenic

ii Having lived in a malarious district in Italy, and then for 5 years in Buenos Aires, a man developed malaria for the first time, *P vivax* being found in the blood

iii Facial neuralgia of long standing cleared up in two cases under quinine In one the pain appeared about the same hour of the day and was associated with enlarged spleen, in the other the hour of incidence was irregular In neither was the blood examined

iv It is concluded that splenectomy may benefit malarial cachexia, especially with preliminary tying or clamping of the splenic vessels Its possible modes of action are noted

v In 26 malaria cases the amylase in the urine was determined several times It is lessened during an attack, and its quantity is without relationship to the chlorine, or to the reaction, of the urine

vi Dicrotism in the cold stage anacrotism or monocrotism in the hot stage and monocrotism in apyrexia are held typical

vii Louis XI of France begged the Prior of Notre Dame des Salles at Bourges that he should pray incessantly for the monarch s reception of quartan malaria since his physicians believed that without this the epilepsy from which he suffered would remain uncured

C L

ASCOLI (Vittorio) Le traitement specifique du paludisme —*Semana Médica* 1925 Nov 26 Vol 32 No 48 (1663) pp 1369 1375

CORTESI (Tancredi) Alcuni casi di paralisi progressiva curati con la inoculazione della malaria —*Policlinico* Sez Prat 1925 Dec 7 Vol 32 No 49 pp 1708 1709

CRÉTEUR A propos du traitement de la paralysie générale par la malaria suivi de cure aux arsénobenzols ou aux sels de bismuth —*Arch Méd Belges.* 1925 Sept -Oct Vol 78 Nos 9 10 pp 293-298

MEYER (E) Zur Malariabehandlung der progressiven Paralyse —*Deut Med. Woch* 1926 Feb 19 Vol 52 No 8 pp 313 314 [2 refs]

ROWSTRON (Noel F) Malarial Treatment of Tabes Dorsalis [Memoranda]—*Brit Med Jl* 1925 Dec 5 pp 1062-1063

SERGENT (Edm & Et), PARROT (L) FOLEY (H) & CATANEI (A) De l'emploi de la quinine contre le paludisme —*Arch Inst Pasteur d Algérie* 1925 June Vol 3 No 2 pp 196-200 [1 ref]

THRASH (E C) Report of a Case of Cerebrospinal Syphilis treated by Inoculation with Malarial Parasites —*Amer Jl Syph* 1926 Jan Vol 10 No 1 pp 94-95

WEYGANDT (W) Erfolge und Bedenken bei der Malariabehandlung der progressiven Paralyse —*Therap der Gegenwart* 1926 Feb Vol 67. (N S Vol 28) No 2 pp 63-67 [5 refs]

REVIEWS AND NOTICES.

Chininum Scriptiones collectae, anno MCMXXIV editae.—pp xii+262. With 22 plates, 12 plates of posters, 1 fig & 1 map. 1925. Amsterdam: Bureau for Increasing the Use of Quinine, 48 De Wittenkade.

It is a fair criticism of a publication produced by an organization whose object is to increase the consumption of quinine that it is not the place in which to look for opinions adverse to the drug. It is, however, the case that, apart from contributions (accompanied by beautifully reproduced portraits) from GRASSI, LAVERAN and ROSS, two of them already dead to our great loss, all but three of the 19 articles dealing with malaria are reproductions in, or translations into English of, collected papers which have already appeared in various Journals, and that they all exhibit in one way or another the value of quinine. It is however, equally the case that the comprehensive arrangements made by the Bureau of Hygiene and Tropical Diseases for a full collection of current literature have been able to place at the writer's disposal no publication upon which a contrary case might be based, so that the volume contains a fair statement of the position of medical experience on the value of quinine and the other alkaloids of cinchona. Most of the papers dealing with the value of quinine in malaria have already been abstracted in this *Bulletin*. Of those which are new, GRASSI's contribution comprises a masterly survey of the methods used for the prevention of malaria with special reference to Italy. It is noted that spots abandoned by all and called " the fields of death " are now family homes. LAVERAN characterized quinine as a specific remedy. ROSS notes that malaria has withheld the entire African Continent from civilization. Besides the portraits there are 20 other plates as beautifully reproduced as the former. The whole book repays study.

Clayton Lane.

CARLETON (H. M.) [M.A., B.Sc., D. Phil., University Lecturer in Histology, Oxford.] **Histological Technique for Normal Tissues, Morbid Changes and the Identification of Parasites.** (Chapters VII and VIII in Collaboration with Frederic HAYNES, B.A., Demonstrator of Histology.)—pp xv+398. With 17 text figs. 1926. London: Oxford Medical Publications: Humphrey Milford. Oxford University Press. [Price 16s. net.]

This volume gives in a compact form the chief methods employed in the histological examination of human and other mammalian organs.

The author has included two chapters on the cell itself, having regard particularly to the conception of cells and tissues as colloidal entities which are very easily altered as the result of the various processes to which they are subjected.

The methods of fixation and staining are very clearly set forth and a number of " Type Methods " are described in detail. When these have been mastered special methods should not be difficult.

The methods of microscopic examination of the various organs and tissues are given in detail and a valuable part of the book is found in the notes appended to the various methods. These " Notes " culled from the author's experience give the little " Tips " that are so valuable in mastering the technique of the various methods, and will be found extremely useful to laboratory workers.

The author has shown admirable judgment in selection of the various processes described. Histo-chemical tests, injection methods, vital staining, histo-pathological processes and bacteriological methods are also included, and a bibliography of the standard works and important monographs is appended

While the histological technique is very clearly and fully dealt with, the chapter on bacteriological methods is not up to the rest of the book For instance, in Gram's stain, films treated for two to three minutes in 1 per cent aqueous methyl violet will, after the application of iodine, require a considerable amount of decolourizing with alcohol Thirty seconds in ½ per cent methyl violet is long enough

In Ziehl-Neelsen's stain, the time given for decolourizing the film in 25 per cent sulphuric acid is only three to five seconds This doubtless is a slip and even three to five minutes is not sufficient if blood is present in the preparation

There are a number of errors in the text The chemical formulas for potassium nitrate and borax are given as K_2NO_3 and $Na_2B_2O_7$ respectively On page 106 an 8 mm objective is termed a ⅛ inch On page 329 " Chlorinati " should be spelt " chlorinatae "

The printing and binding are good, and there is an adequate index

This volume can be recommended to all workers on histological methods and will be found of great value to pathologists and senior students

M McCartney

We have to deplore the deaths on June 2nd of Sir William LEISHMAN and of Sir Stewart STOCKMAN Sir William LEISHMAN joined the Honorary Managing Committee in April 1911 before the expansion of the then Sleeping Sickness Bureau into the Tropical Diseases Bureau Sir Stewart STOCKMAN joined the Committee on the Bureau's expansion in 1912

BUREAU OF HYGIENE AND TROPICAL DISEASES.

TROPICAL DISEASES BULLETIN.

Vol. 23.] 1926. [No. 8.

KALA AZAR.

Indian Medical Research Memoirs. Supplementary Series to the *Indian Journal of Medical Research*. 1926. Feb. Memoir No 4. pp. iv. + 288. With numerous illustrations. **Reports of the Kala-Azar Commission, India. Report No. 1. (1924-25.)**

Much of the information contained in this report, the first issued by the Commission now working in India on the kala azar problem, has already been published and noted in this *Bulletin*. In the Introduction, S.R. Christophers, who was for some time Director of the Commission in Assam, gives a most useful account of the present distribution of kala azar, especially with reference to the factors which appear to regulate its occurrence and spread, as also a summary of the main results so far obtained by the Commission in Assam and by the "Kala Azar Ancillary Enquiry" in Calcutta.

The present position held by the Commission that the sandfly is most probably the vector of kala azar has not been taken up precipitately, but has followed a definite line of work which aimed at a logical and systematic investigation of the whole field. The fact that careful investigations had failed to incriminate numerous blood-sucking Arthropoda—particularly the bed-bug, louse and flea, as also intestinal helminths, rather tended to check enthusiasm for the insect-borne hypothesis of kala azar. There was, however, some suspicion that it was just possible that the bed-bug was concerned or that some undiscovered arthropod was the host, or that infection was by way of the alimentary canal. It would be expected that the parasite of kala azar outside the body would be even more delicate than that of typhoid, a disease which, in its tendency to explosive outbreak associated with slow spread from case to case, resembles kala azar in many respects. The slow spread in typhoid has been shown to depend on the degree of humidity; hence it might be expected that kala azar would not be transmissible except under very special meteorological conditions. Falling in with such a theory would be the close family and site connexion of cases of the disease as seen in India. If, however, such were the method of spread, then the parasite should be able to survive in watery solutions and to cause infection by way of the alimentary canal. Investigations undertaken along these lines have shown that though viable parasites escape in the urine, there is an increasing improbability that the parasite would be able to behave in a manner

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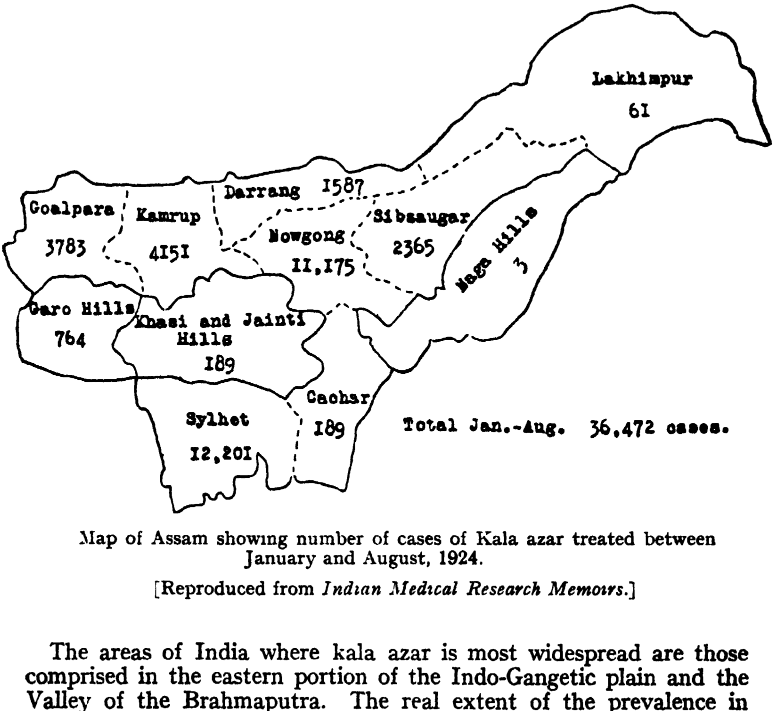
capable of leading to infection by the mouth. Careful experiments with mice, recorded in the report, are most decisive and demonstrate that it is highly improbable that infection can be produced in this way. The inability of the parasite to adopt the flagellate stage except under very special circumstances affords a further argument against this view.

As regards the distribution of kala azar in India, NAPIER points out that it is associated with one set of physical circumstances, viz., the existence of alluvium and a certain heaviness of rainfall. Furthermore, the distribution is distinctly suggestive of a fauna relationship but not of any one known species of blood-sucking host, though in India, as pointed out by SINTON, the distribution of the disease coincides very closely with that of *Phlebotomus argentipes*. If, however, the sandfly is the vector, then to account for the occurrence of kala azar in other countries more than one species of *Phlebotomus* must be involved.



Map of Assam showing number of cases of Kala azar treated between January and August, 1924.

[Reproduced from *Indian Medical Research Memoirs.*]

The areas of India where kala azar is most widespread are those comprised in the eastern portion of the Indo-Gangetic plain and the Valley of the Brahmaputra. The real extent of the prevalence in these parts has only been brought to light since the institution of treatment centres. As these centres only draw a part of the cases from a limited circle, it is clear that the figures illustrated in the map represent only a small proportion of the total.

The map shows that kala azar affects almost every district within the area. It does not, however, occur above a certain altitude, for Shillong at a height of 4,000 feet appears to be free.

In Assam, as in a large part of Bengal, the villages consist for the most part of isolated homesteads 50 to 100 yards apart in the midst of rice fields, patches of jungle and bamboo groves. It is only for administrative purposes that numbers of such homesteads are delimited as a village. There is a very definite house infection, which in many cases is traceable to the introduction of a relative or other person from a known, previously infected house, and there is reason to believe that, once introduced, kala azar does not disappear until the whole of the population in the focus has been destroyed.

The arrangements of the typical house seem to have little to do with the question of kala azar transmission, nor does there seem to be anything significant about the simple domestic arrangements. The associations of kala azar in Assam are essentially jungle, but such surroundings are not necessary for transmission of the disease. The fact that young children who are frequently infected practically never leave the precincts of the house is in direct opposition to the view that a jungle inhabiting blood-sucking insect is the vector. A feature that cannot fail to be noticed in Assam is the extraordinarily high humidity and stillness of the air associated with a uniformly moderate temperature. In Madras, however, the conditions are entirely different. In the place of isolated lightly-built houses are densely packed small masonry habitations. It is of especial interest that BARRAUD in his paper in the report finds that *Phlebotomus argentipes* occurs abundantly under these circumstances.

Though the work of the Commission started on somewhat generalized lines, the discovery by the Ancillary Enquiry in Calcutta that the parasite developed readily in the sandfly focussed attention on this insect. It has been found, as already noted in this *Bulletin*, that after feeding on kala azar cases the parasite flagellates and increases rapidly in numbers till the whole mid-gut becomes infected. Anteriorly in some flies the infection spreads to the pharynx and even the buccal cavity.

The above summary gives the most important results obtained by the Commission. Individual papers not hitherto noted in this *Bulletin* give in detail the investigations undertaken. CHRISTOPHERS, SHORTT and BARRAUD describe their observations on the morphology and life-cycle of the parasite of Indian kala azar in culture. They note that the tissue form of the organism is definitely orientated as regards the position of the nucleus, parabasal, rhizoplast and flagellar vacuole so that dorsal and ventral surfaces and anterior and posterior ends can be distinguished. A similar orientation is applicable to the flagellate stage. The same authors, in two papers, describe their experiments directed to the infection of mice by intraperitoneal inoculation of cultures of *L. donovani* and the results obtained by feeding mice with cultures. It is noted that primary cultures of an age of seven days or more almost invariably produce infection when injected intraperitoneally. Younger cultures are probably incapable of doing so. The intensity of the infection was in direct proportion to the dose of virus employed and during the period of observation the infection showed no tendency to spontaneous disappearance. As regards the attempts at oral infection, with one exception, where a fallacy may have been introduced, the experiments were uniformly negative. Two other papers by the above mentioned authors and one by NAPIER and SMITH give some further details regarding feeding experiments with *Phlebotomus argentipes*, the main results of which have alerady been noted, CHRISTOPHERS, SHORTT and BARRAUD in another paper describe attempts made to infect larvae of *P. argentipes* with cultural forms of *L. donovani.* The larvae after feeding on the cultures were allowed to pupate and hatch, but the emerging flies showed no infection. **Napier** and **Smith** contribute a paper on the bionomics of *P. argentipes* in Calcutta under the headings habitat, feeding, flight, breeding, prevalence, effect of temperature and humidity, effect of rain, normal life cycle, humidity, temperature, food, natural enemies and parasitic infections. As regards habitat, the places where flies were caught are cattle sheds, human sleeping quarters and chicken houses. The first of these yielded the largest number of flies, though sometimes as many as 30 flies were caught in a single sleeping room. Though the flies were never observed in horse stables, they sometimes occur in unusual places as illustrated by one fly caught in a tree in the Zoological Gardens. The adult female is a pure blood feeder, the males never showing anything in the intestine but remains of the larval feed. The female chooses either man or the cow, preferably the latter. The flight of the fly is very limited, for it moves but a few inches when disturbed. They have never been found in unused rooms or far from the food supply, nor in upper rooms of a house. Larvae have been found on five occasions. Twice in rooms the floors of which were covered with earth and fowl droppings, once in material collected from a fowl box, once in a godown in which goats were kept and once in a rat-hole in a room. Pupae were found

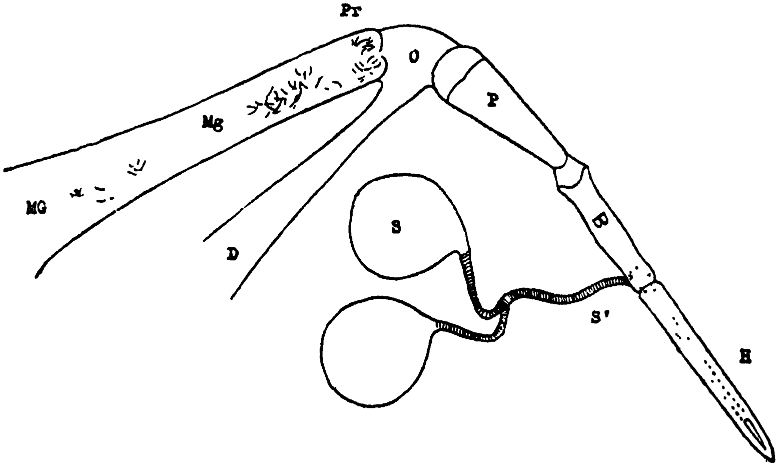
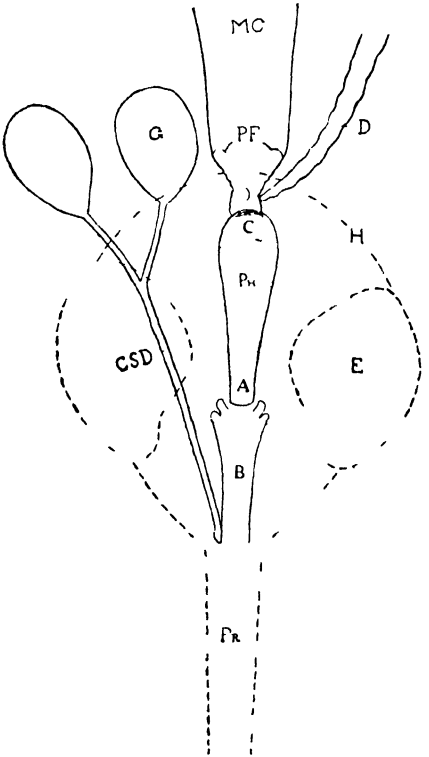


Diagram showing appearance of parts in dissected sandfly

MG Midgut.
Mg Narrow anterior part of same.
Pr Proventricular fold.
O – Membranous oesophagus
D Diverticulum of same
P — Chitinous pharynx or pumping organ
B Chitinous buccal cavity
H = Hypostome. other mouth parts not shown, opening of salivary duct at end
S = One of the two salivary glands
S' Common salivary duct ending in salivary pump at base of hypostome.

[Reproduced from *Indian Medical Research Memoirs.*]

with the larvae on two occasions The flies have been caught throughout every month of the year The number appeared to be reduced with cold and lowered humidity Actual rain appeared to increase the numbers caught, probably as a result of flies seeking shelter indoors In the laboratory the whole cycle occupies about 30 days, ova 4 days, larvae 14 days pupae 7 days The female feeds on the second day, and if fertilized oviposits on the 5th or 6th day and dies immediately If fertilization does not take place a second feed is taken by some on the 5th day and they survive to the 9th or 10th day Rarely a fly will take a third feed and survive to the 15th day Ova and larvae require a very high degree of humidity, but the pupae do not require this The lowest recorded temperatures of Calcutta did not kill either the eggs or larvae The larvae appear to thrive best on dried rabbit s faeces and dried human blood They would live on fowl faeces and numerous batches were fed after the first instar on dead adult sandflies Natural enemies of the larvae are mites, while ants and cockroaches destroy them if they gain access to the breeding trays Spiders catch adult flies in their webs Geckos were seldom present on the walls where flies were caught Parasites which occur in *P argentipes* include a



Diagrammatic representation of dissected head of *Phlebotomus argentipes* showing the approximate relation of important parts

MG	Anterior end of mid gut
PF	Proventricular fold
O	Oesophagus
D	Diverticulum
C	Crinkly posterior part of pharynx
Ph	Pharynx
A	Anterior end of pharynx
B	Buccal cavity
G	Salivary glands (shown displaced to one side)
CSD	Common salivary duct
Pr	Outline of proboscis
E	Outline of eye
H	Outline of head

MG PF O D C Ph A and B are situations where flagellates have been found

[Reproduced from *Indian Medical Research Memoir*.]

gregarine in the larvae and adults, and flagellates—a species of *Bodo* and what appeared to be a *Crithidia* Rhabdiform larvae and adult nematodes were also observed in the fly

CHRISTOPHERS, SHORTT and BARRAUD give an illustrated account of the anatomy of the head and mouth parts of the adult fly, while BARRAUD contributes a report on a sandfly survey of Madras Town Four species of Phlebotomus (*P argentipes*, *P minutus*, *P squamipleuris* and *P papatasii*) were present, the first being by far the commonest

The same authors describe the technique employed by them in breeding *P argentipes* in Assam The gravid female flies are placed in a receptacle consisting of a globular lamp glass standing in a Petri dish in which have been placed several thicknesses of damp filter paper On the filter paper is spread a quantity of rabbit or goat's faeces previously heated to 60 C for an hour to kill fly larvae, mites and other predaceous creatures The upper opening of the glass is closed with a plug of cotton wool while the space between the glass and the rim of the dish is packed with the same material The filter paper and cotton wool must be kept in a thoroughly damp condition and the whole apparatus maintained at 24° C After eggs have been laid the dish is removed and covered with its lid and kept at the same temperature The eggs hatch in about a week, the larvae hiding themselves in the food material They must be kept in the dark and the food moistened if

A simple apparatus in which large numbers of *P argentipes* have been successfully reared from the egg

[Reproduced from *Indian Medical Research Memoirs* necessary every day till towards the end of the second week when pupation commences The pupal stage lasts 7 to 8 days The flies which emerge are then transferred to a small cage made of muslin Finally NAPIER's article on epidemiological considerations of the transmission of kala azar shows that every observation appears to be in keeping with the theory that *P argentipes* is the transmitter of the causative organism of kala azar The fly is not observed above 2,000 feet and its development is dependent on a high humidity and a moderate steady temperature , the high subsoil water level and alluvial soil help the maintenance of the necessary humidity throughout the drier months of the year

C M Wenyon

CHRISTOPHERS (S R) Recherches sur le kala-azar dans l Inde Britannique **Researches on Kala Azar in British India.**|—*Bull Office Internat d Hyg Publique* 1926 Mar Vol 18 No 3 pp 271-27? [1 ref]

This note gives a summary of work carried out with *Phlebotomus argentipes* Kala azar in India is most common in Bihar, Bengal and Assam with a population of about 100 000 000 In 1924 more than 100,000 cases were treated in Bengal and Assam but these represent but a small proportion of those suffering from the disease

C M W

SHORTT (H E) BARRAUD (P J) & CRAIGHEAD (A C) **Note on a Massive Infection of the Pharynx of** *Phlebotomus argentipes* **with** *Herpetomonas donovani.*—*Indian Jl Med Res* 1926 Jan Vol 13 No 3 pp 441-444 With 1 plate and 1 text fig [1 ref] Also *Indian Med Res Memoirs* 1926 Feb Memoir No 4 pp 157 160

This paper describes further results of experiments with *Phlebotomus argentipes* and kala azar Three flies, which had fed twice on cases of kala azar and were dissected on the eighth day after the first feed, were found to have a massive infection of the proximal end of the pharynx By cutting serial sections of the heads of two of these flies, the exact distribution of the flagellates was noted In a note to the paper two other similar infections are described the flagellates extending into the buccal cavity, in close proximity to the commencement of the biting parts Of another series of fourteen fifth day flies sectioned, four showed infection of the mid gut, six infection of the mid gut and pharynx, and four were entirely negative It is stated that these findings appear " to be all that is required, short of the final proof of a transmission experiment, to demonstrate that kala azar is transmitted by the bite of the sandfly

The paper is illustrated with a diagram of the dissected head of the sandfly and a drawing showing the flagellates in the pharynx and buccal cavity

C M W

RAMAN (T K) **Kala-Azar.**—*Madras Med College Mag* 1926 Vol 5 No 3 pp 185-194

The author draws attention to the fact that *Phlebotomus argentipes* is with difficulty induced to feed more than once, that it lives at most 8 days, and thus cannot be responsible for the continued infectivity of a house for months after a case of kala azar has left, and that in certain cases in spite of its presence in an infected house other cases do not occur, while it may be present in numbers in a locality free from the disease. He states that these observations " make one pause before accepting the findings of the Research Workers' Conference of Calcutta as convincing. Nay, these findings seem to negative their assumption " and " seem to prove that sand-flies are not the culprits." In an earlier paper the author states that " the place of the bed-bug is taken by the sand-fly, *P. argentipes*, which seems to be the most probable vector of kala azar." He then speculates on the possible methods of transmission by these flies, but it is evident that he should make observations on a more extensive scale before he pronounces an opinion.

C. M. W.

Report of the 2nd All-Bengal Kala-Azar Conference. Opened by H. E. Lord Lytton, the Governor of Bengal. Held at the Govt. House, Calcutta on 21st November, 1925. The Rotunda Hall, Writers' Buildings, Calcutta on 22nd, 23rd & 24th Nov., 1925. [CHATTERJEE (G. C.), Hon. Sect.]—pp. iv. + 161. With 12 figs. Published by Sect., The Central Co-opt. Antimalaria Soc. Ltd., 1-2A Premchand Boral Street, Calcutta.

The papers read at the Conference deal chiefly with the incidence of kala azar in various parts of Bengal and the efforts which have been made to treat the cases which have been brought to light. It was concluded that though the method of spread of the disease was not known it was still possible to check its spread and even eradicate it by means of the well-known antimony treatment. Quite apart from the fact that the various surveys had revealed the widespread nature of the disease, it was evident that it was on the increase and that in many places the death rate was twice as high as the birth rate. It was decided that the campaign against the disease could not be carried out effectively unless there was complete co-operation between all the various organizations whose duty it was to guard the health of the population. It was proposed to set up a " Kala Azar Intelligence Bureau " to co-ordinate the work and the information obtained. To carry out the scheme, sufficient financial assistance from the Government would be essential.

C. M. W.

TURKHUD (D. A.), KRISHNAN (K. V.) & IYER (P. V. Seetharama). **An Investigation of Kala-Azar in Certain Endemic Areas in Southern India.**—*Indian Jl. Med. Res.* 1926. Jan. Vol. 13. No. 3. pp. 703-747. With 1 map, 1 chart & 3 plans.

The authors of this report studied kala azar in various towns and villages of Ramnad and Tinnevelly in Southern India. In all, 216 cases of the disease were encountered and these were studied from the points of view of distribution, age, sex, caste, date of onset and family and house incidence. In all these respects the disease corresponded with the types well known in other parts of India. Special attention was paid to the possible occurrence of carrier cases. It was noted that apparently perfectly healthy children might have splenic enlargement, and the examination of a number of these showed that some at least had kala azar. In various places 2,503 children were examined. Of these, 83 had enlargement of the spleen and kala azar was diagnosed in 11 of them. It was also found that 7 men, who from the history they gave had undoubtedly had kala azar, had recovered after attacks of *cancrum oris.* A careful survey of the fauna and flora associated with the disease was carried out. Most noteworthy is the fact that *Phlebotomus argentipes* was found in all the endemic areas of the Ramnad district: at Kilakarai and Panaikulam, both Mohammedan towns, every house visited was found to be infested with these flies. It may be noted that the Mohammedans supplied the majority of cases of the disease. In other places the fly was not found or was rare, but this is attributed to the season being unfavourable. At Kayalpatnam it was noted that a tick (*Ornithodorus savigny*) attacked man. Other important biting arthropods found were Culicoides, Cimex, Pulex and Ctenocephalus.

From the data obtained the authors draw certain conclusions regarding the method of spread of kala azar. Owing to the filthy conditions of the houses and the fact that dysenteric complications of kala azar so commonly occur, they see a possibility that the disease may result from oral contamination, especially as children are so commonly attacked. They state that malaria, an insect-borne disease, is most usually seen in adults and if kala azar is similarly insect-borne, the same should apply to it. On the other hand, they recognize that their observations on *Phlebotomus argentipes* conform with the view that it is the transmitter of the disease.

C. M. W.

MUDALIAR (M. R. Guruswami), RAMAN (T. K.) & RAMAN MENON (K.). **Kala-Azar on the West Coast of India.**—*Indian Jl. Med. Res.* 1926. Jan. Vol. 13. No. 3. pp. 531-532. [3 refs.]

A Mohammedan, aged 25, travelled from Bombay to Madras and was immediately admitted to hospital and found to be suffering from kala azar. He had lived in Calicut till August, 1924, when he took train to Mangalore, where he remained 3 days before taking steamer to Bombay. He remained in Bombay, or Kalyani, 35 miles distant, for 14 months, during the last 5 of which he was not well. He then travelled to Madras. It is evident he contracted kala azar in Calicut, Mangalore or Bombay, but unless a very long incubation period is admitted it must have been in Bombay.

C. M. W.

CHATTERJEE (Anukul Chandra). **Infectiousness of Kala-Azar and its Control.**—*Indian Med. Rec.* 1926. Jan. Vol. 46. No. 1. pp. 1-14. [14 refs.]

This is a lengthy discussion of the question of infection in kala azar and the method of prevention. It is concluded that a kala azar case is not directly infectious but that it renders a locality infectious. Furthermore, during treatment by tartar emetic this property of infecting localities is lost, so that it should be possible to eradicate the disease by a well organized wholesale treatment of all cases in infected villages. A careful watch for early cases will be important in checking outbreaks at their commencement.

C. M. W.

Société des Nations. Organisation d'Hygiène. Etude épidémiologique sur la "Leishmaniose viscérale" en Espagne. [Pittaluga (G.).] **[League of Nations. Epidemiological Study of Kala Azar in Spain.]**—28 pp. With 3 text figs. 1925. Oct. 8. Genève. C.H. 368. In Spanish in *Rev. Méd. de Barcelona.* 1926. Jan. Year 3. Vol. 5. No. 25. pp. 42-62. With 1 map. [57 refs.], and in Italian in *Ann. d'Igiene.* 1926. Apr. Vol. 36. No. 4. pp. 259-284. With 1 map.

The report is a summary of knowledge regarding kala azar in Spain, between three and four hundred cases of which have been diagnosed. The distribution illustrated in a map shows that there are 3 main endemic centres. The largest is on the east coast, another is on the southern coast, and a third is in Madrid and the districts between it and Portugal. Other smaller centres occur, and it appears evident that with further observation a wider distribution will be made known. The disease corresponds in all respects with the infantile kala azar of other Mediterranean foci. In certain places dogs also have been found infected, and though the author states that Vila had sent him from Tortosa in 1914 a sick cat it is not clear that leishmania were actually found in the animal, though he refers to the well known discovery of such an infection in a cat by Sergent, Lombard and Quilichini. Much of the article is taken up with a discussion of the possible mode of transmission, and the various repeatedly discussed insects are passed under review without anything definite being asserted. Sand flies (*Phlebotomus papatasii, P. legeri, P. minutus* and *P. sergenti*) are abundant in Spain throughout the summer both in the towns and certain rural districts.

The author advocates a careful investigation of the disease in Spain and emphasizes the importance of accurate diagnosis by discovery of parasites before the institution of treatment with tartar emetic, which has given very good results.

C. M. W.

de Buen (Sadi.) Le kala-azar infantile et les autres leishmanioses en Espagne. **[Infantile Kala Azar and other Leishmanial Infections in Spain.]**—*Bull. Office Internat d'Hyg. Publique.* 1926. Mar. Vol. 18. No. 3. pp. 268-70. [2 refs.]

Accounts of kala azar in Spain have already been published by the author (this *Bulletin*, Vol. 22, p. 697). In the present note he again states that he has himself had information of 88 cases but that in all about 300 cases have been noted in Spain. Certain details of the localities affected and the temperature conditions prevailing are given. In certain places sand flies have been seen.

C. M. W.

de Capua (Filippo). La diffusione della Leishmaniosi infantile. Osservazioni sulla casistica di un decennio. **[Diffusion of Infantile Kala Azar in Naples.]**—*Pediatria.* 1926. May 1. Vol. 34. No. 9. pp. 449-466. With 4 charts & 1 map. [6 refs.]

During the ten years 1916–1925 there have been observed at the Clinica Pediatrica of Naples 401 cases of kala azar. Though the whole of the province yielded cases the majority came from the district immediately south of Vesuvius. Children from 18 to 24 months of age are most usually infected. With treatment 75 per cent of the cases recover. It has been found by experience that the separation of the infants from their mothers by taking them into hospital is a very dangerous procedure, which considerably diminishes the chances of recovery.

C. M. W.

JUNKIN (Charles Ivan). **Kala-Azar. A Case occurring in New York.** —*Jl. Amer. Med. Assoc.* 1926. Feb. 13. Vol. 86. No. 7. pp. 479-482. With 3 text figs. [9 refs.]

The paper gives an account of a case of kala azar in an Indian who had been in the United States 18 months. He was admitted to hospital as a result of an accident and declared that he had previously been quite well except for an attack of fever 5 years before. The accident having undoubtedly caused a rupture of the left kidney, the diagnosis was for some time obscure. The persistence of fever, together with an enlarged spleen, raised the possibility of kala azar, which was diagnosed by the discovery of *Leishmania donovani*. The interesting feature of the case is the history which, if correct, would indicate infection in Colombo. The patient was born and raised in the Calcutta district but had been employed as a dock labourer in Colombo for " several years " before going to the United States. At Colombo, at the Suez Canal and at the point of entry to the United States he passed the medical examinations. Unfortunately the paper does not state whether during his residence in Colombo he returned to Calcutta from time to time.

C. M. W.

GIRAUD (Paul) & CAUDIÈRE (Marcel). Les lésions histologiques du kala-azar infantile. [**The Histological Lesions of Infantile Kala Azar.**]—*C.R. Soc. Biol.* 1926. Apr. 9. Vol. 94. No. 12. pp. 885-887. [1 ref.]

A study of fatal cases of infantile kala azar in the Marseilles district has shown that the infection in the liver, spleen, bone-marrow and glands attacks the endothelial elements, so that kala azar can be regarded as a disease of the reticulo-endothelial system, a view which explains the clinical symptoms and the pathology of the disease.

C. M. W.

DUDGEON (Leonard S.). **Case of Kala-Azar in a Child treated with Intravenous Sodium Antimony Tartrate. Death. Microscopical Examination of the Various Viscera.**—*Proc. Roy. Soc. Med.* (Section of Trop. Dis. & Parasit.) 1926. May. Vol. 19. No. 7. pp. 11-13.

The author describes a fatal case of infantile kala azar which was unsuccessfully treated with tartar emetic. The illness began in Singapore when the child was 1½ years of age and exactly one year after it had been brought there from Malta, where it had lived 3 months and where it is probable infection had taken place. The child, which suffered from bronchial attacks and diarrhoea, tolerated the injections of tartar emetic badly, especially as these had to be administered under an anaesthetic. It died on September 2nd a few hours after receiving an injection of antimony, the treatment having been commenced on May

25th. A careful post-mortem examination was made and the various organs examined Parasites were discovered in the liver, spleen, bone-marrow, haemolymph glands, duodenum and ileum.

C. M. W.

CANNATA (S) Ulteriore contributo alla terapia della Leishmaniosi infantile [**Treatment of Infantile Leishmaniasis.**]—*Pediatria.* 1925 Dec 15 Vol 33 No 24. pp 1309-1311.

In the treatment of infantile kala azar in Italy, the author has found that certain cases are resistant to tartar emetic. He gives a brief account of three such cases which responded to treatment when sodium antimony tartrate was substituted and of ten cases which were effectively treated with this drug from the beginning He points out that as the cases which were resistant to the potassium salt responded to the sodium salt the cases cannot be regarded as resistant to antimony but merely to the particular salt of antimony.

C M W.

MITRA (Nibaran Chandra) **Urea Stibamine in Kala-Azar. A Report on Sixteen Cases.**—*Calcutta Med Jl* 1925. Nov. Vol 20. No 5 pp 177-183

The paper is an account of the author's experience in the treatment of a number of cases of kala azar. He is inclined to believe that though urea stibamine gives very good results, these are improved by combining its use with that of sodium antimony tartrate The duration of treatment is lessened if a course of urea stibamine is commenced after a few injections of antimony tartrate

C. M. W.

CHATERJEE (Anukul Chandra) **Experience in the Treatment of Kala-Azar with Urea-Stibamine.**—*Indian Med Rec.* 1926. Feb. Vol 46 No 2 pp 39-44

The author gives an account of 18 cases of kala azar, all admitted to hospital in a critical condition, treated with urea stibamine Some were treated at first with sodium antimony tartrate and proved resistant to the drug Of the 18 cases 13 were cured and 5 died. It is noted that this result is not so good as those reported by others who have used urea stibamine, but nevertheless the drug has the great advantage of curing rapidly and not causing any symptoms of intolerance.

C. M. W.

KUNDU (S.) **Intra-Muscular Injection of Urea Stibamine.**—*Indian Med. Gaz* 1925. Dec Vol 60 No 12. pp. 583-584.

The paper records a case of kala azar in a child aged 1½ years which was successfully treated by intramuscular injections of urea stibamine. Nine injections of ·01 to ·08 gm. in 1 to 2 cc of distilled water were given every third day, a total of 0·65 gm. The injections caused no trouble except the last, which was given into the muscles of the thigh. There was high temperature for three days, and pain and swelling at the site of injection. The intramuscular injections were discontinued and in a fortnight the child appeared to have been cured To prevent relapse, four intravenous injections were given A year has now elapsed and the child is quite healthy

C M W

NAPIER (L E) **A New Organic Antimony Compound for the Treatment of Kala-Azar.**—*Indian Med Gaz* 1925 Dec Vol 60 No 12 pp 571-572

At the request of the Union Drug Company Ltd Calcutta, the author tested on seven cases of kala azar a preparation labelled ' Aminostiburea " It was a light brown powder easily soluble in water and giving a brown coloured solution It was said to be a combination of para amino-phenyl-stibinic acid with urea and glucose and to contain 24 8 per cent metallic antimony The results indicate that as regards its therapeutic efficiency the drug is in the same class as stibosan and urea stibamine

C M W

BRAHMACHARI (Upendra Nath) & DAS (Judhisthir) **Chemotherapy of Antimonial Compounds in Kala-Azar Infection. Part XVIII. Further Observations on certain Derivatives of P-Amino-Phenyl Stibinic Acid Continued.**—*Indian Jl Med Res* 1926 Jan Vol 13 No 3 pp 693 694

A series of chemical notes relating to (1) Stib-glycine amide, (2) glucose compounds with p amino phenyl stibinic acid and its derivatives, (3) condensation of dichloro acetamide with p aminophenyl stibinic acid, (4) sodium salt obtained by replacement of NH_4 from urea stibamine by Na The compound is named sodium-carbamino p stibanilate It is noted that the glucose compounds mentioned are weaker (? therapeutically) than the antimony compounds from which they are derived

C M W

YOUNG (Charles W) & HERTIG (Marshall) **Attempts to transmit Kala Azar by Means of Rodent Lice,** *Haematopinus* **sp.**— *Proc Soc Experim Biol & Med* 1926 Feb Vol 23 No 5 pp 398-402 [3 refs]

The fact that hamsters kept in captivity become heavily infested with lice (*Haematopinus* sp) led the authors to test the possibility of transmission of *Leishmania donovani* by these insects It is known that parasites occur in the peripheral blood of patients in China, while smears of the heart blood made at autopsy from heavily infected hamsters are usually positive Furthermore, sandflies (*Phlebotomus* sp) fed on both striped and giant hamsters may develop flagellates in their intestines It is thus evident that parasites occur at least at times in the peripheral blood of these animals Though smears of lice from 153 striped hamsters and 329 giant hamsters known to be infected were examined, in no case were leishmania found Crushed lice were then injected into a number of striped and giant hamsters and in three instances the striped hamsters became infected Attempts were made to effect transmission from hamster to hamster by keeping pairs of infected and uninfected hamsters in the same cage but separated of necessity by a wire screen, owing to their cannibalistic habits Fifteen pairs of striped hamsters and ten pairs of giant hamsters were kept in this way for periods varying from 22 to 357 days. Though there was every possibility of the lice passing from one animal to another, in no case did infection result. In addition, two striped hamsters and one giant hamster kept separately had lice transferred to them from infected animals. During the observations of 229 to 271 days no infection occurred. It is thus evident that though *L. donovani* may survive for a short period in lice, no development takes place.

C. M. W.

YOUNG (Charles W.) & HERTIG (Marshall). **Attempts to transmit Kala Azar by Means of Bedbugs** (*Cimex* **sp.**).—*Proc. Soc. Experim. Biol. & Med.* 1926. Feb. Vol. 23. No. 5. pp. 402-405. [5 refs.]

Experiments similarly conducted to those described above were carried out with striped hamsters and the bed bug, *Cimex lectularius*, and the bat bug, *Cimex pipistrelli.* The bugs thrive in the pots in which the hamster cages are kept. Eleven experiments were made with the bed bug and ten with the bat bug, and though the observations extended from 112 to 286 days, no infection occurred. It is noted that in China kala azar cases are solitary, there being only one infected person per household. Adults and children frequently sleep crowded together, the patient among them, and as bed bugs are plentiful a succession of cases would inevitably occur if this insect were the vector.

C. M. W.

YOUNG (Charles W) & HERTIG (Marshall). **A Search for Field and House Rodents Naturally Infected with Kala-Azar.**—*Proc. Soc. Experim. Biol. & Med.* 1926. Feb. Vol. 23. No. 5. pp. 395-398. [2 refs.]

The extreme susceptibility of the striped hamster to inoculation with *L. donovani* suggested the possibility of this animal acting as a reservoir for the parasite. Large numbers (4,480) of these animals were examined, and in one a very heavy natural infection was discovered. Its organs were used for the inoculation of 11 other hamsters, 8 of which became infected. 400 giant hamsters and 134 voles were examined with negative results. Of house rodents, 400 rats and 114 mice from clean houses and 210 rats and 57 mice from kala azar houses were not infected. Thus of 5,819 rodents examined, only one was infected. It should be noted that the one infected hamster was kept in the same building as infected hamsters, but in a separate room, and that it was killed 6–8 weeks after being brought from the field. Nevertheless, the authors do not doubt it was an instance of natural infection. As it came from a locality where 5 per cent of the inhabitants are infected, it does not appear probable that these rodents are the source of human kala azar.

C. M. W.

YOUNG (Charles W.) & PAO-YUNG LIU. **Susceptibility of Field, House and Laboratory Rodents to Infection with** ***Leishmania donovani.***—*Proc. Soc. Experim. Biol. & Med.* 1926. Feb. Vol. 23. No. 5. pp. 392-395. [3 refs.]

As a result of the discovery that the striped hamster (*Cricetulus griseus*) was very susceptible to inoculation with *L. donovani* in N.

China, it became desirable to test the susceptibility of other animals. It was found that the giant hamster (*Cricetulus triton*), a vole (*Microtus* sp.) and the Chinese house mouse (*Mus wagneri*) are markedly susceptible and showed no tendency to spontaneous recovery, whereas the house rat (*Mus rattus*), white rat (*Mus norvegicus albinus*) and the white mouse (*Mus musculus albinus*) showed infections of only moderate intensity and seemed to exhibit a tendency to recover spontaneously.

C. M. W.

YOUNG (Charles W.), SMYLY (H. Jocelyn) & BROWN (Cabot). **Experimental Kala Azar in a Hamster,** *Cricetulus griseus* **M. Edw.**—*Amer. Jl. Hyg* 1926. Mar. Vol. 6. No 2 pp. 254-275. With 7 figs on 2 plates. [18 refs.]

This paper is an amplification of those already reviewed (this *Bulletin*, Vol. 21, p. 720) and deals with the susceptibility of the striped hamster to inoculations with *Leishmania donovani*. It is shown that in this animal there is no tendency to spontaneous recovery as there is in the case of the white rat. Infection is most easily effected by intraperitoneal inoculation which leads to a general infection as also one of the peritoneal cavity in which parasites may persist for at least 11½ months. Intrapleural inoculation also leads to a general infection, but in this case no infection of the peritoneal cavity occurs. Subcutaneous inoculation is successful in a smaller proportion of cases, but feeding has given only negative results. After an interval of about one month, liver puncture is a safe criterion of systemic infection, but 5 to 10 per cent of light infections may be missed.

C. M. W.

KLIGLER (I. J.). **The Cultural and Serological Relationship of** *Leishmania*.—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925 Nov. 19 & Dec. 17. Vol. 19. Nos 5 & 6. pp. 330-335. [4 refs.]

In an earlier paper (this *Bulletin*, Vol. 21, p. 726) the author described a method of cultivating leishmania in a medium which differed from that used by NOGUCHI for the cultivation of leptospira only in the addition of whole blood of the rabbit in place of serum. In the present paper the author gives an account of serological investigations carried out with various strains of leishmania. His results agree with those obtained by NOGUCHI (this *Bulletin*, Vol. 22, p. 692).

The author maintained cultures on a 0·2 per cent. nutrient agar medium containing 0·1 per cent. dextrose and 10 per cent. fresh rabbit serum. The stock semi-solid agar is prepared by adding one part of standard dextrose agar to nine parts of normal saline solution. The tubes, each containing 4·5 cc., are autoclaved. When required, the semi-solid agar is melted and 0·5 cc. of fresh rabbit serum added to each tube. The medium is transparent and straw coloured, and growth occurs in the upper portion of the medium as abundantly as aerobic bacteria. After seven to ten days there is a heavy greyish mass about 3 to 5 mm. in thickness and swarming with flagellates. For the study of fermentation reactions the medium is made with plain agar without dextrose and 0·5 per cent. of the desired carbohydrate added. The occurrence of fermentation was determined by testing the pH of the medium. As the acidity rarely rises above pH 6·0 neutral red proved to be a satisfactory indicator.

Immune sera were prepared by inoculating rabbits intravenously at three- to five-day intervals with doses of 0·5 to 2·0 cc. of heavy surface growth. Serum drawn from animals seven to ten days after a fifth injection were potent in dilutions of 1-40th to 1-100th.

For carrying out agglutination tests, the most satisfactory results were obtained with cultures on ordinary 1·5 per cent. nutrient agar slants to which 0·1 per cent. dextrose and 10 to 15 per cent. clear rabbit serum were added. A heavy suspension of young flagellates was inoculated into the water of condensation, after which the tubes were slanted so that the whole surface of the agar was covered. In seven to ten days a good greyish-white growth covers the slant. The growth is washed off with saline solution and the emulsion shaken vigorously in a flask with beads to break up clumps. The emulsion is placed in tubes and allowed to stand till the heavier particles have settled. The supernatant fluid is then used for the agglutination test. If the suspension is made in buffered solution of pH 7·0 it stands up much better than in ordinary saline.

To the suspension serum is added in various concentrations. In a dilution of 1-5th the flagellates are immobilized in two or three hours and agglutination can be observed under the microscope. Macroscopic agglutination is visible in twenty-four hours. A second method is to draw the flagellates from the surface of a seven-day-old growth in the semi-solid medium described above. It is emulsified and shaken with an equal volume of saline solution. To 1 cc. or 0·5 cc. of the emulsion in a Wassermann tube is added an equal volume of the dilute serum and mixture is effected by rotation. At 25° C. distinct agglutination is observed in forty-eight hours in the higher concentrations of serum (1-5th and 1-10th).

Not only does the serum agglutinate the flagellates but in the higher concentrations it exerts a definite lytic action producing degeneration of the flagellum and then the nucleus.

As a result of these experiments, it was found that the organisms causing distinct pathological conditions were serologically distinct. *Leishmania tropica* (strains from Aleppo, Bagdad and Palestine and a fourth strain of unknown origin) was serologically distinct from *Leishmania infantum* and *Leishmania brasiliensis,* which again were serologically distinguishable from one another. As regards the fermentation tests, it was found that all the strains of *Leishmania tropica* gave uniform results. Dextrose and saccharose were fermented with ease: maltose and lactose less readily. Mannite was not fermented. *Leishmania brasiliensis* fermented only dextrose, and *Leishmania infantum* dextrose and saccharose. Owing to lack of other strains of the last named forms, it was not possible to test the constancy of these reactions.

C. M. W.

GIUFFRÉ (M.). La reazione meiostagminica di Ascoli nella leishmaniosi interna. [**The Meiostagmin Reaction in Kala Azar.**]—*Pediatria.* 1926. Apr. 1. Vol. 34. No. 7. pp. 337-349. [32 refs.]

The author has tested the meiostagminic reaction of ASCOLI in cases of infantile kala azar. The reaction is a reduction in surface tension of a mixture of serum containing antibody and antigen which becomes evident after incubation at 37° C. to 50° C. The surface tension is tested with a stalagmometer, an instrument for registering the rate of drops, which is highest in liquids of low tension. In the case of kala azar antigens were prepared from cultures of *Leishmania donovani* and *Leishmania tropica* and the spleen removed post mortem. With the first antigen thirteen tests gave a positive reaction in five, with the second four tests gave a positive reaction in one, and with the third antigen five tests gave a positive reaction in two.

C. M. W.

MELENEY (Henry Edmund). Ueber Wucherung des Lungengefässepitheliums bei mit Kala-azar infizierten Affen. [**Proliferation of Epithelium of Lung Vessels in Monkeys infected with Kala Azar.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Dec. 16. Vol. 29. No. 12. pp. 685-689. With 2 text figs. [4 refs.]

The object of the paper is to draw attention to the fact that in monkeys experimentally infected with *Leishmania donovani* the endothelial cells of the capillaries and veins of the lung may show marked hypertrophy, giving rise to nodules composed of large endothelial cells filled with parasites, as is commonly noted in the liver, spleen and other organs.

C. M. W.

FUNAIOLI (Giulio). La leismaniosi canina in Tripolitania. [**Canine Leishmaniasis in Tripolitania.**]—*Arch. Ital. Sci. Med. Colon.* Tripoli. 1925. Jan.-Feb.-Mar. Vol. 6. No. 1-2-3. pp. 12-14. [6 refs.]

An examination of 177 dogs in Tripoli during 1922 and 1923 for evidence of leishmania infection led to the discovery of two cases of canine kala azar, one in August, 1922, and the other in November of the same year.

C. M. W.

CÉSARI (E.). La leishmaniose canine. [**Canine Leishmaniasis.**]—*Rev. Générale Méd. Vét.* 1925. No. 15. Vol. 34. No. 407. pp. 613-632. [10 refs.]

The article gives a general account of canine kala azar, the author evidently having been stimulated to write it as a result of his recent discovery of the disease in dogs at Grasse in the South of France (*ante*, p. 104) There is no new information, the article having been based on papers which have been reviewed in this *Bulletin* from time to time.

C. M. W.

SERGENT (Et.), CATANEI (A.), GUEIDON (E.), BOUGUET (A.) & DES ISLES (H. Merle). Le clou de Mila. [**Clou de Mila.**]—*Arch. Inst. Pasteur d'Algérie.* 1925. Mar. Vol. 3. No. 1. pp. 1-8. With 12 figs. [2 refs.]

The existence of oriental sore at Mila in Algeria has been already noted (this *Bulletin*, Vol. 21, p. 725). The present paper gives a more detailed account of the investigations in this district. Ten cases of the disease are noted and leishmania were found in ulcers in the ear and nose of a dog. Examination of the bone marrow did not reveal any parasites. Sand flies are plentiful in the district, the commonest species being *Phlebotomus perniciosus*. Other species are *P. papatasii*, *P. minutus* and *P. sergenti*. The paper is well illustrated with photographs of the human and canine cases and views of Mila.

C. M. W.

AGRONIK (M. A.) Zwei Fälle von Hautleishmaniosis. [**Two Cases of Dermal Leishmaniasis.**]—*Dermat. Woch.* 1925. Nov. 14. Vol. 81. No. 46. pp. 1665-1673. With 2 text figs. [29 refs.]

A description of two cases of oriental sore in men who had returned to Moscow from South East Russia In one case the incubation period was at least a year, while in the other two sores developed at the site of a skin wound.

C. M. W.

AGRONICK (M. A.). **On the Propagation, Pathogenesis and Treatment of the Oriental Sore.**—*Russian Jl. Trop. Med.* Moscow. 1925. No. 1-2-3 English summary p. 74. [In Russian pp. 65-68 41 refs]

The author draws attention to cases of oriental sore in Moscow in people returning from the Transcaspian districts. He mentions an outbreak which occurred at Serax on the frontiers of Persia where in the course of one month 150 soldiers of the Red Army had to be invalided because of the disease. During last year he saw 14 such cases in Moscow.

C. M. W.

SERGENT (Edmond) & PARROT (L.). *Phlebotomus papatasii* **and Oriental Sore.** [Correspondence.]—*Indian Jl. Med. Res.* 1926. Jan. Vol. 13. No. 3. pp. 749-750.

The writers state that in their experiments with sand flies and oriental sore, in which by inoculating crushed-up female sand flies into the skin of a human being oriental sore was produced (this *Bulletin*, Vol. 19, p. 315), the actual flies crushed were assumed to be *P. papatasii* as they were large and easily distinguished from *P. minutus*. The assumption that they were not *P. sergenti*, which closely resembles *P. papatasii*, is justified, for of several hundred male flies collected in the same locality at the same time none was found to be *P. sergenti*. A later examination confirmed this, for *P. sergenti* was not found in Biskra.

C. M. W.

NICOLLE (Charles). Quelques considérations sur la leishmaniose tégumentaire américaine. [**Reflections on American Dermal Leishmaniasis.**]—*C. R. Soc. Biol.* 1926. Feb. 26. Vol. 94. No. 7. pp. 476-477.

During a stay of three weeks in the provinces of Salta and Jujuy in the Argentine the author had an opportunity of observing 20 cases of cutaneous leishmaniasis. The well known differences between the skin disease of S. America and that of the eastern hemisphere, viz., the long duration, severity and tendency to invade the mucosae in the case of the former, were evident, but in addition another peculiar feature was noted. The American disease showed a marked predilection to involve the margins of the nostrils and the upper lip. The author believes that this is an indication that the disease is not spread by sand flies or mosquitoes, which do not select these points on account of the inconvenience caused them by the air currents due to breathing. He thinks it more probable that direct inoculation takes place from man to man by one of the heavier biting arthropods or by direct contact. The long duration of the disease is in favour of this method of transmission.

Cultures obtained of the organism showed that it differed in no way from other forms of leishmania.

C. M. W.

MONTENEGRO (João). **Cutaneous Reaction in Leishmaniasis.**—*Arch Dermat. & Syph.* 1926. Feb. Vol. 13. No. 2. pp. 187-194 With 3 text figs. [3 refs]

A cutaneous reaction having been demonstrated by WAGENER (this *Bulletin,* Vol. 22, p. 202) in rabbits rendered immune by injections of culture, the author tested the reaction in cases of leishmaniasis in Brazil. The extract was prepared as described by WAGENER except that the flagellates from the cultures were washed three times in saline solution to remove completely all haemoglobin. Furthermore, it was found that the addition of toluol caused a reaction to appear so that it was omitted. Extracts were made from cultures of Brazilian leishmania (*L. brasiliensis*) and those of oriental sore (*L. tropica*). Injections were made intradermally with a fine syringe. In positive cases, after 24 hours, there appeared a rounded area with a diameter two or three times that of the original papule formed by the inoculation. The area is red, congested, and has a consistency greater than that of the surrounding skin, and is easily palpable. In some cases the centre of the papule remains pale and clearly defined : at other times all one sees is punctiform haemorrhage in the centre at the point of entry of the needle. The reaction varies in different cases. In some, vesicles are formed. The reaction lasts several days and disappears slowly. The test was applied to 37 cases and a positive reaction was obtained in 32. Of 36 cases free from leishmania infection 33 gave no reaction, while 3 gave less intense reaction which, however, differed from the specific leishmania reaction. The extract of *Leishmania tropica* produced a reaction in a Brazilian case, an indication that the two species are identical.

C. M. W.

DE REZENDE (Mario Ottoni). Cura da leishmaniose das mucosas. [**Cure of Mucosal Leishmaniasis.**]—*Ann. Paulist. Med. e Cirurg.* 1925. Nov. Year. 13. Vol 16. No. 11. pp. 135-142.

In May, 1923, the author brought to the notice of the Medical Society of S. Paulo a method of treatment of leishmaniasis of mucous membranes by means of lactic acid applied locally. He here records twenty more cases in which the results appear to have been excellent and rapidly achieved. The disease affected usually the nose and had existed for periods up to 13 years. Curettage was performed and thereafter weekly applications of 80 per cent. lactic acid were made and usually in one to three months complete cure was effected. In many of them the usual forms of treatment, as by "606" and by antimony injections had been tried in vain.

Intravenous injection of 1–2 per cent. lactic acid (wrongly stated as 20 per cent. in one record) in doses of 2 cc. on alternate days was also employed, but was not so satisfactory and produced toxic symptoms.

H. Harold Scott.

PUPO (J. de Aguiar). Tratamento da leishmaniose da mucosa pelo "Eparseno" (Amino-arseno-phenol, de Pomaret). (Estudo preliminar.) [**Treatment of Mucosal Leishmaniasis by Eparseno.**]—*Brazil-Medico.* 1926. Apr. 10. Year 40. Vol. 1. No. 15. pp. 201-204; also in *Sciencia Medica.* 1926. May 31. Vol. 4. No. 5. In Portuguese pp. 207–211. In French pp. 212–216.

The author reports three cases of S. American cutaneous and mucosal leishmaniasis in which he has obtained excellent results by treatment with intramuscular injections of eparseno (dioxy-diamido-arsenobenzol) as prepared by Poulenc Frères, Paris. Injections of 12½ to 25 centigrams (1 to 2 cc.) can be given, and though there is some local pain no untoward results follow. As many as 10 to 20 injections can be given in series at intervals of 2 to 3 days.

C. M. W.

SINDERSON (H. C.). **Emetine Hydrochloride in the Treatment of Oriental Sore. Notes on a Further Series of Cases.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Oct. 15. Vol. 19. No. 4. pp. 232-234. [1 ref.]

In an earlier paper (this *Bulletin*, Vol. 22, p. 206) the author describes the good results following treatment of oriental sore with a 5 per cent. solution of emetine. He now gives an account of the treatment of another series of cases in which 22 patients with a total of 83 sores were treated with a 2 per cent. solution in place of the 5 per cent. solution previously used. In only one case, a solitary sore at the root of the nose, have the results been other than uniformly satisfactory. The essential point in injection is to reach every part of the sore and in the large ulcerating forms it may be necessary to puncture in three or four places. Following injection, the puncture site is sealed with a little cotton wool and collodion flexile to prevent escape of fluid. The sores are dressed daily with a simple dry-gauze, the edges of which are painted with collodion flexile. When ulceration is very deep, healing may not be complete for a month, but in small unbroken sores the process is usually complete within a fortnight. The uniformly successful results not only indicate the great value of emetine hydrochloride in the treatment of oriental sore, but they give the drug strong claims to being considered a specific remedy for this disease.

C. M. W.

i. RAYNAUD (Lucien). **Leishmaniasis in North Africa.**—*Monthly Epidemiol. Rep. of the Health Sect. of the Secretariat.* League of Nations. 1925. Dec. 15. Vol. 4. No. 12. pp. 609-615. With 1 text fig. [86 refs.]

ii. GÉRARD (F.); SALVO; CORTESI. Nouvelles observations de kala azar en Tunisie. [**Fresh Kala Azar Cases in Tunis.**]—*Arch. Inst. Pasteur de Tunis.* 1925. Dec. Vol. 14. No. 4 pp. 462-464.

iii. BARBACCI (P.) Sur un cas de *Leishmania infantum* observé à Sienne (Italie). Remarques épidémiologiques. [**A Case of Infantile Kala Azar seen at Sienna.**]—*Bull. Soc. Path. Exot.* 1926. Jan. 13. Vol. 19. No. 1. pp. 11-14 With 1 text fig.

iv. BOUCHÈ (B. J.) **A Case of Kala-Azar in the Simla Hills.**—*Indian Med. Gaz.* 1926 Jan Vol 61. No. 1 pp 20-21.

v. MÜHLENS (P.) Ein mit Antimosan geheilter Fall von indischem Kala-azar. [**A Case of Indian Kala Azar cured by Antimosan.**]—*Arch f Schiffs- u Trop.-Hyg.* 1926 Apr. 1. Vol. 30. No. 4 pp. 160-166. With 7 text figs [1 ref.]

vi. KASUGA (Kenzo) & TAMURA (Ichiro) [**Cultivations of** *Leishmania donovani* **and some Experiments on the Immunization.**]—*Gun-I-Dan Zasshi (Jl. Japan Milit Med. Assoc)* 1925 Mar No 141. [Summarized in *Japan Med World* 1925. Oct 15 Vol 5. No. 10. p. 295.]

i. The article gives no new information and erroneously attributes to McCombie YOUNG the experiments conducted with sand flies in Assam.

ii. A note on the 71st, 72nd and 73rd cases of infantile kala azar in Tunis.

iii. A note on two cases of infantile kala azar observed at Sienna in Italy. It is possible that in both cases the disease was contracted in Monaco.

iv. A case of kala azar diagnosed in the Simla Hills in a patient 12 years of age who had been sent there from Sanawar with a statement to the effect that she was suffering from anaemia, the result of chronic malaria

v. An account of an acute case of kala azar in an Indian sailor which was cured by 4·8 grams of antimosan given in 22 injections during a course of 10 weeks.

vi. The medium employed was a dextrose agar and rabbits' blood. The blood of rabbits which had been infected with the cultures contained agglutinins and gave some indication of a complement fixation reaction.

C. M W

i. DUBREUILH (William) Les leishmanioses tégumentaires. [**Dermal Leishmaniasis.**]—*Jl. Méd. de Bordeaux.* 1926. Jan. 25. Vol. 103. No. 2. pp. 53-58. [13 refs.]

ii. CÉARD (L.). Le bouton d'Orient à Colomb-Bechar (Sud Oranais). [**Oriental Sore in Sud Oranais.**]—*Arch Inst. Pasteur d'Algérie.* 1925. June. Vol. 3. No. 2. pp. 176-181. With 2 text figs. [6 refs.]

iii. TIMPANO (P.) Il 1° caso di leishmaniosi esterna curata col radio. [**The First Case of External Leishmaniasis cured by Radium.**]—*Policlinico.* Sez. Prat. 1926. Feb. 22. Vol. 33. No. 8. pp. 260-262. With 4 text figs.

iv. LINHTROP (G T.) & HUDADOV (D. C.). [**Some Autochthonous Cases of Cutaneous Leishmaniasis in Baku.**]—*Russian Jl. Trop. Med.* Moscow. 1925. No. 1-2-3. English summary p. 72. [In Russian pp. 33-35.]

v JEANSELME & BURNIER Un cas de bouton d'Orient **[Case of Oriental Sore.]**—*Bull Soc française Dermat et Syph* 1925 Nov. No 8 p 426 With 1 fig

vi FRANCHINI (Giuseppe) Su di un caso interessante di Buba Brasiliana **[An Interesting Case of Brazilian Buba.]**—*Policlinico* Sez Med 1926 Jan 1 Vol 33 No 1 pp 27-34 With 4 text figs

vii CAUSEY (David) **Mitochondria in** *Leishmania brasiliensis* **Vianna, 1911**—*Univ California Public Zool* 1925 Nov 21 Vol 28 No 2 pp 19-28 With 21 figs on 1 plate [18 refs]

i This paper is merely a general account of leishmaniasis of the skin

ii The existence of oriental sore in this locality has already been noted by the author (this *Bulletin* Vol 22, p 698) In the present paper four cases are recorded

iii The paper describes a case of oriental sore in Calabria, Italy, with a lesion on the lower lip which was cured by radium treatment

iv A note on 3 cases of oriental sore in Baku

v A case of oriental sore in a child from Persia which was rapidly cured by local injections of emetine

vi A description of a typical case of naso pharyngeal leishmaniasis in a man who had returned to Italy from Brazil One month s treatment with injections of tartar emetic brought about a remarkable improvement in the patient s condition

vii Examining cultural forms of *Leishmania brasiliensis* by appropriate staining methods, the author finds that mitochondria 8 in number, occur in the cytoplasm of each flagellate In the non dividing forms they are spherical but become rod shaped when division commences There is a similarity between the staining reactions of the parabasal body and the mitochondria an indication that the parabasal is a derivative of mitochondria

C M W

RELAPSING FEVER AND OTHER SPIROCHAETOSES

SHARP (N A Dyce) **Epidemic Disease in West Africa. The Menace of the Future.** [**Relapsing Fever.**]—*Trans Roy Soc Trop Med & Hyg* 1925 Oct 15 Vol 19 No 4 pp 256-264 With 3 figs & 1 map in text

The author discusses the recent introduction of louse-borne relapsing fever into West Africa by the Senegalese troops returning there after the war in 1920 who were the direct cause of the epidemic in 1921 in the French Sudan The serious consequences of the introduction of this disease, which on a virgin soil has a mortality rate of between 18 and 30 per cent or more, leads the author to conjecture that advancing civilization is likely to introduce other diseases, such as typhus, enteric, Malta fever and infections hitherto unknown in epidemic form in W Africa As regards relapsing fever the Zabermawa peoples who act as carriers have been chiefly responsible for its spread into Nigeria, where, in a single province having a population of two millions and a relapsing fever incidence of at least 2½ per cent, it would be impossible for even 10 medical men to cope with an epidemic The author's outlook, if a pessimistic one, has unfortunately good reason to support it, and though he thinks that relapsing fever will join the society of the poor in being always with us in W Africa it is worth while to expend the utmost energies in efforts to limit the spread of its twin brother typhus, of which a half-dozen cases have been already reported

C M Wenyon

NOGUE L epidémie de fievre recurrente en Afrique occidentale française (1921-1924) [**The Epidemic of Relapsing Fever in French West Africa.**]—*Ann de Med et de Pharm Colon* 1925 Sept -Oct -Nov -Dec Vol 23 No 3 pp 445-466 [19 refs]

The epidemic of relapsing fever which commenced in French West Africa in 1921 appeared to have completed its evolution by the end of 1924, and the author gives in this paper a general account of the outbreak The view that the disease was introduced by troops returning from Syria and North Africa has many facts against it The disease was not reported from Syria amongst the troops who were returning to their own countries Furthermore the disease did not appear amongst the troops till after their arrival at Kouroussa over 40 days after they left Marseilles and over 2 months after they had left Tunis and the Levant. The troops had been on board ship or in Marseilles, Dakar, Conakry and Kindia, where vermin throve and there was every opportunity of the disease becoming manifest It seems more probable that it already existed in West Africa and broke out amongst the troops who were in a condition to receive and propagate it on their arrival In fact, outbreaks of relapsing fever had already been reported, the last at Ouakim only a few months before the troops returned to Kouroussa, where the infection appeared to commence During the beginning of 1921 it extended from West to East and invaded the valley of the middle Niger, whence it extended along all the windings of the river. It spread north and sent out extensions towards Senegal, the Gold Coast and Nigeria At the time of writing the districts of Chad and the Upper Cameroon are involved. As regards the spirochaete it was said to differ from *T. duttoni* of the Congo in being more polymorphic. It was unquestionably carried by lice and not by the tick, which careful search has failed to reveal in this part of Africa. The symptoms have been often described, but all observers agree as to the suddenness of the onset, which often resembles malaria, associated with rachalgia, cephalgia, general prostration and hyperthermia. Relapse is general unless treatment has been carried out. Jaundice is a common sign and occurred in half the cases in the Sudan and in all those in Haute-Volta. Its moment of appearance varies. Sometimes it is noted on the 2nd day, at other times on the 3rd or even later, It may disappear as the temperature falls, to recur again at the relàpse. Enlargement of the liver and spleen with increased sensibility is a constant sign. Albuminuria is nearly constant, the albumin in one case reaching 10 gm. per litre. More unusual symptoms are bilious diarrhoea, acute delirium, epistaxis, sometimes repeated and leading to subacute anaemia, and other haemorrhages which at Diré were said to be the cause of one half the deaths. As complications were noted suppurative otitis media, sciatica, nephritis and pneumonia. In certain cases, particularly those with jaundice, rapid emaciation occurred.

In the Sudan between May 1921 and March 1922 there were noted by the health authorities 108,696 cases with deaths as follows :

	Recognized cases	Deaths.
Bandiangara centre	4,969	1,250
Koutiala ,, ...	1,795	861
Mopti ,, ...	100,000 (?)	16,270
Niafunké ,, ...	1,149	699
San ,, ...	698	201
Ségou dispensary	85	14

In Haute-Volta 2,474 cases with 1,048 deaths were reported from December 1921 to July 1923.

Under the heading diagnosis various diseases are described, such as malaria, bilious pneumonia, Weil's disease, yellow fever and other spirochaetal infections associated with jaundice. The various efforts at prevention and the measures adopted are explained, but it is pointed out that the study of the spread of the epidemic shows how futile such measures are when they are not assisted by the voluntary and active help of the threatened population. It indicates the necessity of ceaseless education of the native in hygienic matters.

C. M. W.

DE BUEN (Sadi). Note préliminaire sur l'épidémiologie d'une fièvre récurrente à Tiques, en Espagne. **[The Epidemiology of Tick-transmitted Relapsing Fever in Spain.]**—*Bull. Acad. Méd.* 1926. Mar. 16. 3rd Ser. Year 90. Vol. 95. No 11. pp. 294-295.

——. Note préliminaire sur l'épidémiologie de la fièvre récurrente espagnole.—*Ann. Parasit. Humaine et Comparée* 1926. Apr. 1. Vol. 4. No. 2. pp. 185-192.

The author has demonstrated that relapsing fever in Spain is transmitted by a tick, a near ally of *Ornithodorus morocanus*, which lives in association with pigs. The tick was found in all the districts in which relapsing fever occurred, and though lice were sometimes present they could not be responsible for the disease, which attacked chiefly the men who worked away from home. Examination of lice and their inoculation to animals did not produce infection, whereas similar experiments made with ticks were positive. It was suggested that pigs might act as a reservoir for the human virus, but though it was shown that these animals could be infected by inoculation of crushed ticks no evidence was obtained that the pigs were ever naturally infected. In a footnote the author states that BRUMPT has been able to infect animals in Paris with ticks sent from Spain.

C. M. W.

STONES (R. Y.). **A Case of Spirillum Fever with Meningeal Symptoms.** —*Kenya Med. Jl.* 1926. Apr. Vol. 3. No. 1. pp. 27-29.

A record of 2 cases in children aged 10 years who came to hospital on succeeding days from the Mengo High School, both showing meningeal symptoms suggestive of cerebrospinal fever. In one case lumbar puncture yielded a cloudy fluid in which intracellular diplococci were found, while in the other the fluid though contaminated with blood was otherwise clear. The first case died on the 2nd day after admission while the 2nd case had relapses on the 7th and 18th days. At the first relapse the blood picture suggested relapsing fever and a prolonged blood examination revealed one doubtful spirochaete, no organisms having been seen in the blood on admission. At the 2nd relapse spirochaetes were definitely present. No other cases occurred in the school.

C. M. W.

ILLERT (E.). Beitrag zur Kultivierung der Rückfallfieberspirochäte (*Spirochaeta duttoni*). [**The Cultivation of** *S. duttoni*.]—*Deut. Med. Woch.* 1925 Dec 4. Vol. 51. No. 49 p. 2033. [1 ref.]

Having noted that in his cultures of the relapsing fever spirochaete on a medium consisting of dilute rabbit serum (4 parts of serum to 1 part of physiological saline) to which pieces of the white of a hard-boiled egg had been added, the spirochaetes were most numerous between the pieces of egg, an attempt was made to increase the quantity of this substance. The result was not satisfactory. Partially solidified rabbit serum was made by heating the tubes in a water bath for an hour at 73° to 74° C. When seen by dark ground illumination such a medium should show numerous granular flakes between which are spaces filled with fluid. Not every rabbit will yield a serum which will give this result. In this medium a good diffuse growth is obtained at 30° C., while satisfactory subcultures can be made every two or three weeks.

C. M. W.

IWASCHENOFF (G.). N-Paratyphobazillose und Febris recurrens. [**N-Paratyphoid Infection and Relapsing Fever.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Jan. 8. Vol. 30. No. 1. pp. 1-17. With 1 chart in text. [18 refs.]

During epidemics of relapsing fever in Russia it was noted that many of the cases differed clinically from the usual type. There was not the same interval between the attacks, the temperature returning to normal for only a short time. The spleen and liver showed progressive enlargement, jaundice appeared and various nervous symptoms became evident. Diarrhoea, often simulating haemorrhagic colitis or cholera, followed on an initial constipation. The urine was little altered though sometimes traces of albumin and a few red blood corpuscles were noted. The mortality rate amongst these cases was high, sometimes reaching 63 per cent. It was discovered that the disease was due to a double infection with the spirochaete of relapsing fever and a bacillus which in some cases resembled *B. paratyphosus* B. and in others the bacillus of Danysz. The bacilli were isolated not only from the blood but also from the urine, bile, faeces, pus and various organs at post mortem. It appeared evident that the unusual symptoms were due to a septicaemia caused by one or other of these organisms. With cessation of the relapsing fever epidemic the bacillary disease disappeared, so that it seems evident that the two infections are very closely interrelated.

C. M. W.

IMAI (Minoru). Ein Beitrag zur Kenntnis der pathologischen Anatomie der Febris recurrens. Insbesondere ueber die "Orchitis recurrentica." [**The Morbid Anatomy of Relapsing Fever. Orchitis recurrentica.**]—*Jl. Oriental Med.* 1925. Nov. Vol. 4. No. 1. German summary p. 5. [In Japanese.]

In a case of relapsing fever with death from pneumonia it was noted that small miliary haemorrhages occurred in the subcapsular surface of the testis. On section each haemorrhagic area was found to consist of a central core of cells surrounded by a haemorrhagic zone. Between the central core and the blood were numerous large macrophages which included not only erythrocytes and nuclear remnants but also spirochaetes. The condition has been named " Orchitis recurrentica " by the author.

C. M. W.

BYKOWA (Olga). Ueber die Veränderung einiger blutbildender Organe bei Typhus recurrens. [**Changes in Blood-forming Organs in Relapsing Fever.**]—*Virchows Arch. f. path. Anat. u. Physiol.* 1926. Mar. 30. Vol. 260. No. 1. pp. 169-175. With 4 text figs. [10 refs.]

In a detailed study of the changes which take place in the bone marrow, spleen, lymphatic glands and suprarenals in relapsing fever it was found that the hyperaemia and blood extravasation brought about changes which were both regressive and progressive. The regressive changes are seen either in single cells which show nuclear degeneration or complete necrosis, or in groups of cells which produce necrotic patches that may or may not cause reaction in the surrounding tissues. The necrotic areas are very evident in the spleen. The progressive changes are seen in the development of myeloid tissues, especially in the bone marrow, leading to multiplication of the mother cells (*Haemocytoblasts*), which in their turn give rise by division to granulocytes and haemoglobin-containing cells.

C. M. W.

KARTACHEFF (E. V.). Observations sur les globules blancs du sang dans la fièvre récurrente. [**The Leucocytes in Relapsing Fever.**]—*Ann. Inst. Pasteur.* 1925. Dec. Vol. 39. No. 12. pp. 969-982. With 4 text figs.

An examination of the blood of 10 cases of relapsing fever has shown that the Arneth index is deflected to the left. At the attack the older polynuclears perish and are replaced by younger ones which are destroyed before they can reach maturity. Hence there is in the blood an increasing number of cells with the younger types of nuclei. The polynuclears are increased in number when an attack commences, but decrease up to the next attack, when they are again increased. The number of monocytes or large mononuclears does not fluctuate to the same extent but remains high even after an attack. It has been demonstrated that the large mononuclears are active in phagocyting the spirochaetes.

C. M. W.

LEVADITI (C.) & NICOLAU (S.). Action thérapeutique de l'hyposulfite double d'or et de sodium dans les spirilloses et les spirochétoses. [**Therapeutic Effect of Double Hyposulphite of Gold and Sodium in Spirillosis and Spirochaetosis.**]—*C.R. Soc. Biol.* 1926. Jan. 5. Vol. 93. No. 38. pp. 1571-1573. [5 refs.]

Experimenting with the gold salt the authors have found that a solution of 1 in 200 will immobilize the fowl spirochaete in one hour at 37° C., while a solution of 1 in 400 is inactive, unless it be mixed with extract of rabbit's liver. Furthermore, it was found that administered to fowls at a dose of 0·01 to 0·02 gm. per kilogram of body weight the birds were protected against inoculation with the spirochaete. It would appear that the drug has a definite spirochaeticidal action. The study of the action of a drug on organisms *in vitro* may be an important guide to its therapeutic properties. As a rule a substance which is highly toxic to organisms in a tube is neutralized when mixed with extract of liver and is therapeutically inactive. Gold chloride, for instance, which will destroy spirochaetes *in vitro* in a strength of 1 in 100,000, is partially neutralized by cellular proteins and has no curative action on experimental syphillis. The hyposulphite, though much less active when tested directly on spirochaetes, nevertheless has this action increased by organ extracts and is therapeutically efficient.

C. M. W.

PRIGGE (R.). Experimentelle Studien mit Syphilis- und Rekurrensspirochäten. II. Die Sterilisierung mit Salvarsan und die Beziehungen der Immunität zur Persistenz der Spirochäten bei experimenteller Rekurrensinfektion der Mäuse. [**Sterilization by Salvarsan, Relation of the Immunity to Persistence of the Spirochaetes in Experimental Infection of Mice.**]—*Deut. Med. Woch.* 1926. Feb. 26. Vol. 52. No. 9 pp. 356-358. [11 refs.]

——. Die Sterilisierung mit Salvarsan und die Beziehungen der Immunität zur Persistenz der Spirochäten bei experimenteller Rekurrensinfektion der Mäuse.—*Dermat. Ztschr.* 1926. Apr. Vol. 47. Nos. 1-2. pp. 1-25. With 7 tables on folding plate. [26 refs.]

The author disagrees with BUSCHKE that in mice spirochaetes of relapsing fever will persist in the brain substance after salvarsan treatment. He finds:

1. The experimentally produced disease in mice runs a course with two to four relapses and terminates in an immunity which is due to the definite development of antibodies and not to the persistence of spirochaetes in any situation.

2 After a natural recovery spirochaetes only rarely occur in the brain and never after a sterilizing dose of salvarsan With insufficient salvarsan spirochaetes may persist in the brain but they occur also in the blood

3 BUSCHKE's claims were made without recognition of the possibility of spirochaetes inoculated to naturally recovered mice surviving in the brain and tissues for some time, of the importance of sufficient dosage of salvarsan and of the necessity of inoculating to fresh mice not only the brain substance but also the blood

4 In the early stages of infection a new infection may be superimposed, as in the case of rabbit syphilis

5 If treated early with a sufficient dose of salvarsan the infection in mice can be completely eradicated

6 BUSCHKE S conjecture that salvarsan treatment of relapsing fever and syphilis destroys the immunity is therefore contradicted

C M W

KRANTZ (Walther) Salvarsanwirkung bei der Rekurrensinfektion weisser Mause [**Action of Salvarsan in Relapsing Fever in White Mice.**]—*Deut Med Woch* 1926 Feb 5 Vol 52 No 6. pp 234-235 [3 refs]

It has been demonstrated by BUSCHKE and KROÓ that, when mice infected with the relapsing fever spirochaete are treated with salvarsan, in a large percentage of cases the drug fails to eradicate the infection from the brain, as proved by inoculating it to other mice The present writer describes experiments in which 40 mice were inoculated with spirochaetes and were treated with salvarsan in batches of 10 on the 1st, 2nd, 3rd and 4th days respectively, the spirochaetes present in the blood being more numerous on each successive day Five days after the treatment the mice were killed and their brain substances inoculated to other mice to discover the presence or absence of spirochaetes Of the 10 treated on the first day 3 had spirochaetes in the brain 5 days after Of those treated on the 2nd day 5 had spirochaetes in the brain, while of those treated on the 3rd and 4th days, in spite of the fact that their infections were heavy when treated, none had demonstrable spirochaetes in the brain It would appear therefore that the action of salvarsan is correlated with the development of antibodies which were evidently present in the blood in the later treated mice in greater amount than in those treated on the first and 2nd days The old doctrine that salvarsan acts more efficiently in the early stages of infection is thus not necessarily correct

C M W

STEINER (G) & STEINFELD (J) Experimentelle Untersuchungen zur Pathologie und Therapie der Spirochatenkrankheiten III Zweitimpfung und Immunitat bei experimenteller Recurrens [**Repeated Inoculation and Immunity in Experimental Relapsing Fever.**]—*Klin Woch* 1926 Mar 19 Vol 5 No 12 pp 499-502 [2 refs]

After study of experimental relapsing fever in rats and mice the authors reach the following conclusions

1 During the course of a mild primary infection it is possible to produce a superimposed and more intense infection by the inoculation of blood rich in spirochaetes

2. Even when rats and mice are inoculated with the same virus and have infections of the same intensity the period of immunity following the infection varies

3 In the later stages of immunity though inoculated spirochaetes give rise to no infection they can nevertheless be recovered from the blood

4 This short survival of spirochaetes in the blood is prevented if the animals have previously been subjected to intraperitoneal or intracardiac inoculations of virulent spirochaetes, an observation which proves that such inoculations increase the immunity produced by an infection

5 This increased immunity disappears in the course of a few weeks so that after a further inoculation the spirochaetes again persist in the blood for a short time

C M W

HOFF (Hans) & HORN (Ludwig) Serologische Beitrage zur Rekurrenstherapie der progressiven Paralyse [**Serological Contributions to the Relapsing Fever Treatment of G.P.I.**]—*Muench Med Woch* 1926 Apr 30 Vol 73 No 18 pp 731-732 With 1 chart in text [8 refs]

In the treatment of general paralytics by inoculated relapsing fever the meninges appear to play an important part in the changes which occur, for it is found that in the cerebrospinal fluid there is an increase in the cell content and the albumin, associated with a turbidity and the presence of fine flocculi The globulin reaction is also intensified, but whether this is another indication of inflammatory reaction cannot be stated, though the deterioration of the goldsol curve seems to be attributable to it The changes persist for some time after treatment, a fact which probably accounts for the late occurrence of relapses The Wassermann reaction is rarely influenced as far as the cerebrospinal fluid is concerned but in many cases the serum shows an improvement, which however, could not be correlated with the remission of symptoms

C M W

HOFF (Hans) & SILBERSTEIN (Fritz) Experimentelle Untersuchung ueber den Wirkungsmechanismus der Recurrensfiebertherapie bei der progressiven Paralyse [**Investigation of the Mechanism of Action of Relapsing Fever Therapy in G.P.I.**]—*Ztschr f d gesamte exper Med* 1926 Mar 3 Vol 49 No 1-3 pp 294-301 With 6 curves [9 refs]

During the treatment of a series of cases of general paralysis with the spirochaetes of relapsing fever the changes in the opsonic titre of the blood serum and cerebrospinal fluid were investigated It was noted that the opsonic titre as tested against staphylococci and *Bacillus coli* was increased progressively with each attack The same changes were noted in the case of inoculated malaria The superimposed infections thus bring about changes both in the blood and cerebrospinal fluid The permeability of the meninges can be influenced by other means If general paralytics are injected with increasing doses of cholera vaccine agglutinins appear in the blood but not in the cerebrospinal fluid If typhoid vaccine is then injected subcutaneously agglutinins will appear both in the blood and cerebrospinal fluid. As regards the effect of *Treponema pallidum* itself it was found that the serum of general paralytics and leucocytes had no effect on the organisms from cultures in that they were still infective to rabbits On the other hand, if the serum were taken from cases treated with relapsing fever or malaria the serum and leucocytes affected the organisms in such a way that they ceased to be infective. Whatever be the exact mechanism of its action the relapsing fever spirochaete appears to act in the same way as the parasite of malaria.

C. M. W.

MIKI (Riichi) [**Experimental Studies on** *Spirocheta obermeieri*.]—*Fukuoka Ikadaigaku Zasshi* (*Jl Fukuoka Med College*). 1925. Apr. Vol. 18 No 4 [Summarized in *Japan Med World* 1925 Dec 15 Vol. 5 No 12 p 362]

Investigations on the spirochaete of relapsing fever in experimental animals have shown that though 2 7 per cent of animals born of infected parents were infected, this was not due to passage of spirochaetes through the uninjured placenta, but was due to infection during birth when maternal and foetal blood intermingled.

FARRERAS (P) La fiebre recurrente hispánica y su transmisión por la garrapata del cerdo. [**Relapsing Fever in Spain and its Transmission by Pig Ticks.**]—*Rev Española de Med y Cirug* Barcelona 1926. Apr. Vol. 9 No 94 pp 207-208

Some remarks on relapsing fever in Spain, with special reference to its transmission by ticks, as demonstrated by DE BUEN

C M. W.

RAMSEY (Thomas L). **Bronchial Spirochetosis (Castellani).**—*Jl. Lab. & Clin Med.* 1926. May. Vol. 11. No. 8. pp. 751-758. [36 refs.]

Attention is drawn to the occurrence of bronchial spirochaetosis in Ohio, seven cases of which are described. The disease is usually regarded as one of tropical origin, but this is evidently not the case. The course of the disease is usually acute and haemoptysis is a frequent symptom. There is ready response to treatment with arsenicals

C. M. W.

TOURNIER (E.). Les affections pulmonaires à spirochètes de Madagascar. [**Spirochaetal Pulmonary Affections in Madagascar.**]—*Bull. Soc. Path. Exot.* 1926. Apr. 14. Vol. 19. No. 4. pp. 261-262.

There exist in Madagascar certain pulmonary syndromes which must be attributed to spirochaetal infection. They may be classed as bronchitis with blood-stained expectoration, pulmonary congestion or asthma. The last condition is common in the island and produces the characteristic symptoms. In all asthmatic cases spirochaetes have been demonstrated. The various conditions respond readily to arsenical treatment.

C. M. W.

BEZANÇON (Fernand) & ETCHEGOIN (Eugenio). *Spirochaeta bronchialis* et gangrène pulmonaire. [*S. bronchialis* **and Pulmonary Gangrene.**] —*C. R. Soc. Biol.* 1926. Feb. 12. Vol. 94. No. 5. pp. 319-322. [3 refs.]

In 7 of 11 cases of pulmonary gangrene the authors have demonstrated in the sputum spirochaetes which appear to be analogous to that described by CASTELLANI in 1905. It is 8 to 20 microns in length by 0·4 to 0·5 microns in breadth, and is thus larger than *Spirochaeta vincenti* but smaller than *Spirochaeta buccalis*. There is considerable difficulty in staining it in sputum unless the technique recommended by the authors is followed. A small portion of sputum is shaken vigorously in a tube with 1 cc. of distilled water. The tube is then kept in the incubator at 29° C. for 15 to 20 minutes, after which the surface film is removed by a fine capillary pipette. Thin films are made with the fluid. They are fixed in alcohol-ether and stained with Loeffler's flagellum stain.

C. M. W.

ALVAREZ LOPEZ (Anibal). Espiroquetosis broncopulmonar de Castellani. [**Bronchopulmonary Spirochaetosis (Castellani).**]—*Crónica Méd.* Lima. 1925. Oct., Nov. & Dec Vol. 42. Nos 748, 749 & 750. pp 295-307; 321-328; 368-376.

Though no fresh information is brought forward, this paper is of service in presenting a survey of a subject on which there has accumulated a large literature. The author deals briefly with spirochaetosis in general and with bronchopulmonary spirochaetosis in particular, and more especially as it exists in South America. He traces the history of the condition from CASTELLANI'S original description in 1904 to that of MIRONESCO to the Biological Society of Rumania in 1925, by means of a review of the numerous records during this period. He next deals similarly, but in somewhat more detail, with cases reported in South America, the first known being that of VACCAREZA in the Argentine in 1920. A general account of the symptoms, physical signs, diagnosis and treatment is given, together with a description of the method of DE MELLO and ANDRADE for identifying spirochaetes by the "morphological index": the relation between the average length of 100 specimens and the number of turns, expressed as a fraction.

The final section of the paper gives details of two cases in Peru; one by CORVETTO reported in *Anales de la Facultad de Medicina* for 1918, the second by RIBEYRO in *La Crónica Médica* in December of the same year. The sister of the former patient died of tuberculosis and the case is regarded as an association of the two conditions, tuberculosis and pulmonary spirochaetosis, "accepted as an entity by those who have made a study of the disease."

H. Harold Scott.

FRANCHINI (G.). Spirochetosi bronco-polmonare. [**Bronchopulmonary Spirochaetosis.**]—*Pathologica.* 1926. Feb. 15. Vol. 18. No. 412. pp. 61-65. With 1 text fig.

An examination of cases of bronchial spirochaetosis, one of which is described in detail, has led the author to the opinion that the condition cannot be regarded as a distinct disease but rather a group of diseases. The spirochaetes, which may or may not be associated with fusiform bacilli, are exceedingly polymorphic.

C. M. W.

DELAMARE (G). L identification des spirochètes bronchiques d'après quelques travaux récents. (Essai de classification provisoire.) [**Identification of Bronchial Spirochaetes.**]—*Bull. Acad. Méd.* 1926. May 11. 3rd Ser. Year 90 Vol. 95. No. 19. pp. 459-467. [14 refs]

The paper contains a lengthy discussion of the question of the individuality of *Spirochaeta bronchialis.* In spite of the many dogmatic assertions that have been made the author believes that it is identical with the polymorphic form first described by VINCENT and associated with the disease which bears his name.

C M. W.

DELAMARE (G) A propos de l'indice d'identification morphologique des spirochètes bronchiques. [**The Morphological Index of Bronchial Spirochaetes.**]—*C. R. Soc Biol.* 1926 May 7. Vol. 94 No 15 pp. 1141-1143 With 1 fig [3 refs]

By plotting the lengths of various spirochaetes according to the method of FROILANO DE MELLO the author arrives at the conclusion that it affords no means of establishing the individuality of *Spirochaeta bronchialis.*

C. M. W.

VINCENT (H) La fuso-spirochetose bronchique [**Fusospirochaetosis of the Bronchi.**]—*Bull Acad Med* 1926 Feb 16 3rd Ser Year 90 Vol 95. No 7 pp 143-146 [12 refs]

—— Note sur la fuso-spirochétose bronchique (A propos de la communication de M G Delamare.)—*C R Soc Biol* 1926 May 7 Vol. 94. No 15 pp 1143-1144 [4 refs]

It is concluded that the so-called *Spirochaeta bronchialis* is no other than the spirochaete associated with Vincent's angina

C M W

LINS (Abdon) Notas sobre a espirochetose bronchopulmonar de Castellani [**Bronchopulmonary Spirochaetosis (Castellani).**]—*Arch. Brasileiros de Med* 1925 Aug Vol 15 No 8 pp 506-507

The author saw two cases presenting bloodstained expectoration in which neither ova of Paragonimus nor acid-fast bacilli were found, but spirochaetes were numerous For 15 days there was no amelioration ; then neosalvarsan was given and the symptoms cleared up after the first dose Other cases, however, do not yield so readily, it is stated, and the symptoms usually return after a certain time

H Harold Scott.

KOSHINA (M.), SHIOZAWA (S.) & KITAYAMA (K.). **Studies of** ***Leptospira hebdomadis.***—*Jl. Experim. Med.* 1925. Dec. 1. Vol. 42. No. 6. pp 873-895. [26 refs.]

An investigation of the disease known as akiyami which occurs in the Shida district of Shizuoka province in Japan has shown that it is due to a leptospira which is morphologically very difficult to differentiate from *L icterohaemorrhagiae* and *L hebdomadis.* Serologically, however, the organisms appear to be of 2 types One (type A), isolated from 3 of 16 cases, is highly virulent for guineapigs and is serologically distinct from the above-named organisms The other (type B) appears to be identical with *L hebdomadis* The field mouse (*Microtus montebelli*) has been found to harbour type A

C. M. W

KRITSCHEWSKY (I L) & TSCHERIKOWER (R S) Ein neues Immunitatsphanomen gegen die *Spirochaeta icterogenes* [**A New Phenomenon of Immunity to** *S icterogenes*]—*Ztschr f Immunitatsf. u Experim Therap* 1926 Feb 20 Vol 46 No 3 pp 207-215 [5 refs]

A paper describing the production of a specific substance, Thrombocytobarine, in the blood of animals infected with relapsing fever spirochaetes has been reviewed (BRUSSIN, *ante* p 113) The authors have discovered that a similar specific substance is developed in the blood of rats and mice infected with the leptospira of Weil's disease but not in guineapigs The serum of the animal added to citrated blood containing the leptospira causes the blood platelets to become attached to the organisms if the specific substance is present

C M W

UHLENHUTH & GROSSMANN Zur Typenfrage der *Spirochaeta icterogenes.* [**Question of Type in** *S icterogenes.*]—*Cent f Bakt* 1 Abt Orig. 1926 Vol 97 No 4-7 pp 73-75 [1 ref]

Working with the leptospira of Weil's disease and the similar organisms from water the authors have found that distinct serological strains exist The water spirochaetes grow without exception in the serum of rats whereas the Weil's disease spirochaetes will sometimes fail to grow in this medium Though it might be supposed that in cases of failure the rats from which the serum was taken had antibodies in the blood resulting from a latent infection, this is not always the case, for growth has been obtained in serum from rats the kidneys of which were found to be infected If rabbits are inoculated with a strain of water spirochaete the serum develops antibodies which prevent growth of this strain and some, but not all, other strains when the serum is employed for culture media It has been shown in this way that distinct serological races of water spirochaetes exist Similarly by testing various pathogenic strains of spirochaetes isolated from man or rats it was found that serologically they could be separated into different strains The serum prepared from one water strain prevented growth of a strain of the Weil's disease organism.

C. M W

MESQUITA (Bruno Pereira) Espirochetoses intestinaes humanas. [**Intestinal Spirochaetosis in Man.**]—*Arquivos Indo-Portugueses de Med e Hist Nat* Nova-Goa 1925 Vol 2 pp 21-70 With 5 figs on 3 plates [23 refs]

In the first section of this article the author describes the *Spirochaeta eurygyrata*, often found in the faeces, and two other spirochaetes which are denominated *S. Couceiri* and *S. Macfiei*, whose pathogenic powers have not been established.

In the second section several points are considered in greater detail: (1) In the examination of 51 subjects free from any symptoms of intestinal disturbance *S. eurygyrata* was found in 49. It is therefore inferred that to this organism no pathogenicity can be attributed. (2) Examination of 16 cases of intestinal infection, including amoebic dysentery, tuberculous enteritis and helminthiasis, revealed the presence of the spirochaete in all but one. (3) A study of the morphological characters of the spirochaete based on the relation between the length in microns and the number of curves. (4) A post mortem examination of the intestine of a case of tuberculous peritonitis showed that the spirochaete was present in the large intestine but absent from the small intestine. It was most numerous in the caecum and rectum, but was present in smaller numbers in the appendix and colon. (5) The mouth-spirochaetes may be found in the intestine and, since they retain their characters, they are easily distinguishable from *S. eurygyrata*. (6) Lastly, the effect of spirochaeticidal drugs was tried. Neosalvarsan intravenously or by lavage had no effect at all, nor had bismuth, trepol or neotrepol. Stovarsol, on the contrary, taken by the mouth for 6 days in succession was followed by rapid disappearance of the organism from the stools.

H. Harold Scott.

BOSSELUT (R.). Sur un spirochète sanguicole du chien domestique. **[A Blood-keeping Spirochaete of the Dog.]**—*Bull. Soc. Path. Exot.* 1925. Nov. 11. Vol. 18. No. 9. pp. 702-704. With 1 text fig.

A blood film made from a sick dog in Algeria was found to contain spirochaetes 8 to 22 microns in length. Six days later 3 cc. of blood were inoculated intravenously to another dog which was sent to the Pasteur Institute in Algiers where the original blood film had been sent for examination. The dog did not become infected but there is no mention of the presence or absence of spirochaetes in the blood of the first dog after the time of the first examination. The name *Spirochaeta canina* is given to the organism.

C. M. W.

VERVOORT (H.). **Pseudo-Spirochetes or Leptospirae.**—*Amer. Jl. Trop. Med.* 1926. Mar. Vol. 6. No. 2. pp. 155-166. [1 ref.]

The author, who has recovered spirochaetes from dengue-like fevers in Sumatra (*Leptospira pyrogenes*), points out that in the cases described by him there is no question of the organisms having been mistaken for pseudospirochaetes or filaments derived from the red blood corpuscles, for they have been cultivated in phosphoric acid peptone water and other media. In connexion with the failure of observers to discover spirochaetes in dengue in other localities he points out that there is no precision as to what dengue actually is and that under this name what appear to be distinct diseases have been grouped.

C. M. W.

Noguchi (Hideyo). **Abnormal Bacteria Flagella in Cultures: their Resemblance to Spirochetes.**—*Jl. Amer. Med. Assoc.* 1926. May 1. Vol. 86. No. 18. pp. 1327-1329. With 3 text figs. [1 ref.]

Though attention has been called to the danger of confusing blood filaments with spirochaetes no one has yet pointed out that the detached flagella of certain bacteria which may be in the form of spirals may be the cause of error. The writer notes that on one or two occasions on which he was working with mixed cultures of flagellated bacteria and spirochaetes detached flagella have puzzled him and once led him to regard them as involution forms of spirochaetes.

As regards the structure of spirochaetes, it is noted that the relapsing fever type appears to consist of 3 main parts, namely the cytoplasm, the axial filament and the flagella. The cytoplasm is readily dissolved by bile, leaving the axial filament and flagella. The denuding process can be followed by means of dark field illumination. The same change occurs, though it is less marked, in the case of *Treponema pallidum.* The body of the organisms of the rat-bite fever group, as also the leptospiras, are dissolved completely, there being no indication of an axial filament. The great resemblance between the flagella of motile bacteria and the flagellar and axial spiral apparatus of certain spirochaetes suggests that they have a similar origin and supports the view that bacteria and spirochaetes are phylogenetically related.

C. M. W.

Reiter (Hans) Ueber Fortzuchtung von Reinkulturen der Spirochaete pallida, Spirochaete dentium und Spirochaete recurrens [**On the Maintenance of Pure Cultures of** *S pallida, S dentium* **and** *S recurrens*] —*Klin Woch* 1926 Mar 12 Vol 5 No 11 pp. 444-445

A description of media which the author has employed successfully for cultivation of spirochaetes

C. M W

RAT-BITE FEVER.

Franchini (Giuseppe). Contributo allo studio del Sodòku. [**A Case of Sodoku.**]—*Riforma Med* 1926. Mar. 15. Vol. 42. No. 11. pp. 243-244.

A patient who had been treated with a single injection of neosalvarsan after the diagnosis of rat-bite fever continued to suffer from febrile attacks during the next 4 years, associated with glandular enlargement and the development of subcutaneous thickenings and small tumours which led to the formation of furuncles. Though no organisms could be discovered the patient was given a course of neosalvarsan injections which brought about a complete cure.

C. M. Wenyon.

Curtis (E. S.). **Report of a Case of Rat-Bite Fever.**—*China Med. Jl.* 1926. Feb. Vol. 40. No. 2. pp. 158-159.

An account of a case of rat-bite fever at Funing in which the period of incubation was exactly a fortnight. The attacks of fever lasted only 2 days and the rash was represented only by 3 erythematous patches which appeared during the 2nd febrile period. Three injections of small doses of 914 cured the condition.

C. M. W.

Row (R.). **On the Present Position of the Rat-Bite Spirochaete (Bombay).**—*Indian Jl. Med. Res.* 1926. Jan. Vol. 13. No. 3. pp. 445-448. With 17 figs on 1 plate. [12 refs.]

In the early descriptions of the spirillum of rat-bite fever by Japanese workers the length of the organism was given as being midway between that of *S. pallida* and *S. duttoni*, so that when the author discovered a short spirillum in cases of the disease in Bombay he regarded it as a distinct species which he named *Spirochaeta petit.* It appears, however, that there was some confusion in the early accounts, for subsequent workers in Japan describe the organism as a short one similar to that which has been discovered in other localities. In most cases it has been possible to demonstrate terminal flagella but the author has failed to do so in the case of the Bombay strain. Parmanand, however, claims to have done so and regards the Bombay organism as the same as that found elsewhere. The author in the present paper again states that he has been unable to demonstrate flagella and is evidently still of the opinion that the form described by him is distinct. Owing to the difficulty in staining the flagella it is evident that the question cannot be finally answered till strains from other localities are compared side by side with the Bombay strain under identical conditions of animal infections and microscopic technique.

C. M. W.

Theiler (Max). **Experimental Rat-Bite Fever.**—*Amer. Jl. Trop. Med.* 1926. Mar. Vol. 6. No. 2. pp. 131-141. With 6 figs. [18 refs.]

Investigations on the spirillum of rat-bite fever isolated from an infant by inoculation of blood into guineapigs and white mice showed that the organism was identical with *Spirochaeta morsus muris.* White mice and rats are readily infected. They show no symptoms but harbour the organism for long periods. Guineapigs after an incubation period of 6 to 15 days develop fever, enlargement of the lymphatic glands, inflammation and, later, induration of the external genitals and loss of hair. Rabbits were infected by subcutaneous, intradermal and intratesticular injections. About half the animals developed no symptoms but the blood remained infective for guineapigs for 3 weeks.

C. M. W.

Joekes (Th.). **Cultivation of the Spirillum of Rat-Bite Fever.**—*Lancet.* 1925. Dec. 12. pp. 1225-1226. [9 refs.]

The author has succeeded in cultivating the organism of rat-bite fever which was found in over 25 per cent. of the wild rats of London. The medium used was an ordinary inspissated horse serum slope as employed for the growth of Klebs-Loeffler bacilli over which was poured a medium which had been used by Vervoort for the cultivation of spirochaetes. Vervoort's medium consists of peptone 1 gm. dissolved in 900 cc. of distilled water to which 3 cc. of normal phosphoric acid solution had been added. The medium (pH 7·2–7·6) consists of a slope completely immersed in the liquid. When once a culture had been established subculture was easily made in 1 per cent. glucose broth, preferably with the addition of a little rabbit blood. The primary culture was obtained by inoculating the medium with blood of an infected guineapig and incubating at 37° C. In subculture growth occurred both in the incubator and at the room temperature. All cultures contained a coliform bacillus from which it had not been possible to separate the spirillum. Whether this is a condition of obligatory symbiosis has not yet been determined.

C. M. W.

RUYS (A. Charlotte). Der Erreger der Rattenbisskrankheit. [**The Agent of Rat-Bite Fever.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Mar. 1. Vol. 30. No. 3. pp. 112-121. With 8 text figs. [8 refs.]

During the examination of 250 rats in Amsterdam it was found that 3 of them harboured a small spirillum which appears to be identical with that of rat-bite fever. In spite of the fact that it was demonstrated that infected rats transmitted the infection to guineapigs and rats by their bites and that infected mice did the same to other mice the spirillum was found neither in the saliva nor in the secretions from the nose and eyes. A strain from a human case compared with that from rats showed that the two were identical, though a mouse strain, in spite of morphological identity, appeared to be serologically different. The sera of monkeys, rabbits and guineapigs inoculated with the rat or human strains had a lethal and lytic effect on all three strains, whereas the serum of rabbits inoculated with the mouse strain had no action on either the mouse organism or the others. It is pointed out that the organism is not a spiral like a corkscrew but a flat object with undulations in one plane. The simplest method for demonstrating the organism is by dark ground examination, while the thick film method is very useful for the detection of scanty infections. It is concluded that the organism is not a spirochaete but a spirillum.

C. M. W.

WORMS (Werner). Vergleichende experimentelle Untersuchungen mit dem Erreger der Rattenbisskrankheit und der Mäusespirille. [**Comparative Investigations with the Agent of Rat-Bite Fever and Mouse Spirilla.**]—*Cent. f. Bakt.* I. Abt. Orig. 1926. Apr. 1. Vol. 98. No. 3-4. pp. 195-211. With 4 text figs. [32 refs.]

The author has been able to compare the spirillum isolated from a case of Japanese rat-bite fever with one obtained from the blood of mice in Germany. As a result of his investigations, which included morphological studies of the two organisms, experimental inoculation of rats, mice, guineapigs and rabbits and serological and chemotherapeutic tests, he has come to the conclusion that the two organisms, even if they are not identical, are extraordinarily alike. He agrees with ZUELZER (1921), ADACHI (1921) and ROBERTSON (1924) that the organisms of this type are not spirochaetes but spirilla.

C. M. W.

i. GALT (Curtis M.) **Rat-Bite Fever : Report of Case.**—*China Med. Jl.* 1925. Nov. Vol. 39. No. 11. p. 1029.

ii. WARD (John LaBruce). **Rat-Bite Fever: Case Report.**—*Southern Med. Jl* 1926. Mar Vol. 19. No. 3. pp. 182-183.

iii. NEJROTTI (G Mario). Sodòku da morso di gatto. [**Sodoku from Cat Bite.**]—*Policlinico.* Sez. Prat. 1926. May 24. Vol. 33. No. 21. pp 724-727 [51 refs.]

iv. SOROKIN (G E) Zur Klinik der Rattenbisskrankheit. [**Case of Rat-Bite Fever.**]—*Russian Jl. Trop. Med.* 1926. No. 1 German summary p 27 [In Russian pp 9-10. With 1 chart. 1 ref]

v. LANFORD (John A) **Etiology, Pathology and Distribution of Rat Bite Fever (Sodoku).**—*Southern Med Jl* 1926 Mar Vol 19 No. 3. pp 179-182 With 1 chart in text [22 refs]

i. Description of a case of rat-bite fever in a Chinese girl aged 12 at Kiulungkiang, Yunnan Injections of atoxyl brought about recovery.

ii Description of a case of rat-bite fever in Texas

iii The illness described followed the bite of a cat It resembled rat-bite fever in that repeated febrile attacks occurred with eruptions on the bitten hand and body

iv. A detailed description of a case of rat-bite fever in which it was not possible to demonstrate the spirillum though there was rapid response to treatment with arsenobenzol.

v A general account of the disease.

C. M. W.

INFECTIOUS JAUNDICE.

WALCH (E W) & WALCH-SORGDRAGER (G. B.). Enkele opmerkingen over *Leptospira icterohaemorrhagiae.* [**Some Remarks on** *Leptospira icterohaemorrhagiae.*]—*Nederl. Tijdschr. v. Geneesk.* 1925. Oct. 3. Year 69. 2nd Half. No. 14. pp. 1535-1542. With 1 text fig. [13 refs.]

Discussion of some of the methods used in the search for Leptospira in Baltimore rats. To demonstrate their presence both direct microscopical examination and inoculation of animals should be used. An apparently negative inoculation may be tested by the subsequent injection of a highly virulent strain of Leptospira but the test can only be relied upon if the negative result of the first inoculation was due, not to lack of virulence of the strain introduced, but to other factors, as strains of low virulence produce a very limited amount of antibodies. Once (out of 9 trials) a filtrate, obtained by filtering through a Berkefeld V filter a liver emulsion containing Leptospira, proved virulent for guineapigs, though Leptospira could not be seen in it even after concentration on an agar-filter. It was noted, however, that the cultured forms of Leptospira were able to pass through Berkefeld filters V. N and W. Sometimes guineapigs die, showing the classical clinical symptoms, without Leptospira being detected. In such cases their presence in the liver could sometimes be demonstrated by staining sections by Levaditi's method. This observation, together with that of the passage of culture-leptospira through filters, does not favour the existence of a granular phase, although it does not disprove it.

N. H. Swellengrebel.

SCHÜFFNER (W.) & RUYS (Charlotte). Nieuwe gevallen van ziekte van Weil. **[Fresh Cases of Weil's Disease.]**—*Nederl Tijdschr. v. Geneesk.* 1925 Aug 29 Year 69 2nd Half. No 9 pp 1020-1025 [8 refs]

Including two cases reported in this paper and one described in the beginning of 1925 three Dutch cases of Weil s disease are known in which Leptospira has been found In two cases the disease commenced 9 and 11 days after the patient fell into a ditch or canal. Two cases ended fatally The cultivated Leptospira showed agglutination and lysis with the patients' serum in a dilution of 1 5000 (15th day), 1.2500 (24th day), 1 1000 (44th day) The patients' serum had the same action on the three human strains and on one strain of Dutch rat-leptospira Two other Dutch rat strains and a Sumatran human strain (*Leptospira pyrogenes* Vervoort) remained uninfluenced

N H Swellengrebel

WALCH (E. W) Demonstratie van een Leptospira, geisoleerd bij een patient, die klinisch het beeld eener Weilsche ziekte had vertoond. **[Demonstration of a Leptospira isolated from a Case which was clinically Weil's Disease.]**—*Geneesk Tijdschr.* v *Nederl -Indië.* 1926 Vol 66 No 1 pp 115-116

The organism was discovered in the peritoneal cavity of inoculated guineapigs which were not seriously affected The strain showed an increase in virulence in sub-inoculated animals

W J Bais

ADAMSKI (Jan) Przyczynek do zakażeń laboratoryjnych krętkami choroby Weil'a (leptospira icterohaemorrhagiae) Sur un cas de spirochétose icterohemorrhagique par infection au laboratoire **[Case of Laboratory Infection with Icterohaemorrhagic Spirochaetosis.]**—*Medycyna Doświadczalna i Społeczna* Warsaw 1925 Sept-Oct Vol 5 No 3-4 pp 221-224 French summary p. 225. [7 refs]

Working with cultures of *Leptospira icterohaemorrhagiae* isolated from rats the author accidentally contaminated his conjunctiva with the fluid After an incubation period of 9 days, rigors, muscular pains, headache, hyperaesthesia of the eyeballs and a temperature of 100° F. initiated an illness which was proved by the intraperitoneal inoculation of guineapigs with blood to be due to leptospira On the third day the liver was slightly enlarged while the urine contained albumin, red blood corpuscles and casts. The temperature reached 103·3° F. Improvement was evident on the 6th day and by the 8th day all symptoms had disappeared The serum in a dose of 2 cc. protected guineapigs against infection when injected with 1 cc of virulent culture.

C M Wenyon

REITER (Hans) Experimentelle Studien ueber die stumme Infektion und ihre Folgen bei Weilscher Krankheit und bei Nagana. **[Occult Infection and its Results in Weil's Disease and Nagana.]**—*Deut. Med. Woch.* 1926. Mar. 12. Vol 52. No. 11. pp 445-447.

The author demonstrates that it is possible, by the use of attenuated viruses, to produce in guineapigs abortive infections with the leptospira of Weil's disease. Such animals develop an immunity which protects them against inoculation with virulent organisms. Comparing these results with those obtained with a nagana virus it was found that no such abortive infections could be produced with the trypanosomes and accordingly no protective immunity.

C. M. W.

Pettit (Auguste). La serothérapie des spirochétoses ictéro-hémorragiques et de la poliomyélite. [**Serotherapy of Spirochaetosis Icterohaemorrhagica.**]—*Progrès Méd.* 1926. Feb. 20. pp. 279-289.

The paper describes the method of preparation of anti-Weil's-disease serum by the injection of horses with cultures of *Leptospira icterohaemorrhagiae*. The use of the serum in France is limited but all hospitals are agreed that it should be administered in severe cases.

C. M. W.

Widal (F.) & Weissenbach (R. J.). Ictère spirochétosique à recrudescence fébrile. Bacillémie et bacillurie concomitantes à bacille paratyphique. [**Spirochaetal Jaundice with Recurrence of Fever; Paratyphoid Bacilli concomitant.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1926. Mar. 18. Year 42. 3rd Ser. Vol. 50. No. 10. pp. 434-448. With 1 chart in text. [10 refs.]

Bruhl (I.) & Ferru (M.). Ictère infectieux de nature et d'étiologie discutables, spirochétosique ou paratyphique. [**Infectious Jaundice of Uncertain Origin; Spirochaetal or Paratyphoid.**]—*Ibid.* Apr. 1. No. 13. pp. 512-515.

The two communications were stimulated by the publication in an earlier number of the same journal (Feb. 1. 1926) by Pagniez and Escolier, and May and Boulin of accounts of two cases which, though clinically resembling Weil's disease, gave no indication of a leptospira infection. The case now reported by Bruhl and Ferru was of the same type but yielded in blood culture and guineapig inoculations an organism of the paratyphosus B type, while the serum gave a positive reaction with the leptospira of Weil's disease. The case described by Widal and Weissenbach is very similar. Leptospira was not isolated but the serum was definitely active against this organism. Furthermore, on two occasions from the blood and on many occasions from the urine a bacillus similar to that noted by Bruhl and Ferru was isolated. It was agglutinated by the patient's serum at 1-5000 but was not agglutinated, even in dilutions of 1-30, by typhoid, paratyphoid A and B, or Gaertner sera. If the serological reaction as a test for leptospira infection has the value usually attributed to it then it has to be admitted that in these cases a double infection occurred.

C. M. W.

Adamski (Jean). Contribution à l'étude de la biologie de *Leptospira icterohaemorrhagiae*. [**The Biology of** *L. icterohaemorrhagiae*.]—*C. R. Soc. Biol.* 1926. May 14. Vol. 94. No. 16. pp. 1206-1207.

The author has found that in a medium consisting of dilute rabbit serum leptospira will remain alive and apparently normal for 6 weeks at a temperature of 37° C., 3 months at a temperature of 30° C. and 7 months at room temperature. In a medium containing 0·2 per cent. of guineapig blood kept at 30° C. living and normal organisms were present after 16 months. The organisms develop better in medium made with serum which has not been heated to 58° C.

C. M. W.

Lins (Abdon). Novas observações do *Leptospira icterohemorrhagiae* nos ratos do Rio de Janeiro. [*L. icterohaemorrhagiae* **in Rats in Rio de Janeiro.**]—*Brazil-Medico.* 1925. Oct. 31. Year 39. Vol. 2. No. 18. pp. 243-246. [28 refs.]

An examination of 30 rats in Rio de Janeiro for *Leptospira icterohaemorrhagiae* during 1923 and 3 months in 1925 has resulted in the discovery of 7 infections so that it is not improbable that infectious jaundice will appear in the city.

C. M. W.

Mac Dowel (Affonso). Dois casos de espirochetose. [**Two Cases of Spirochaetosis.**]—*Brazil Medico* 1925 Sept. 19. Year 39. Vol. 2. No. 12 pp. 169–171.

Two cases are recorded briefly, one a boy of 16 years of age, the other of 14 years, with symptoms of fever, and icteric tinge and, in the latter, wasting and gastrointestinal disturbance. In the urine of both spirochaetes were found and in the faeces also of the second patient.

The first was given 10 injections of "914," each of 0·15 gm , the second was given the same followed by five injections of 0·30 gm every three days. Cure resulted in both

H. Harold Scott.

Elders (C.). Over de kliniek der ziekte van Weil. [**Case of Weil's Disease.**]—Reprinted from *Geneesk. Gids.* 1925 Apr 17. Vol. 3. No. 16 pp 365-371. With 1 chart in text.

Description of a fever case characterized by a primary attack and two relapses in a European in Deli (Sumatra) observed in 1908 and now recognized by the author as a case of Weil's disease.

N. H. Swellengrebel.

i. Kato (Juichi). [**On Spirocheta-like Bodies in the Blood.**]—*Juzenkwai Zasshi* (*Jl. Juzen Med. Soc.*). 1925. Apr. Vol. 30. No. 4. [Summarized in *Japan Med. World.* 1925. Dec. 15. Vol. 5. No. 12. p. 358.]

ii. Hoffmann (W. H.). Los Leptospiras y las Leptospirilosis. [**Leptospiras and Leptospirillosis.**]—*Semana Méd.* 1925. Apr. 23. Vol. 32. No. 17. pp 932–940. With 12 text figs.

iii Hoffmann (W. H.). Die Leptospirillosen. [**Leptospirillosis.**]—*Muench. Med. Woch.* 1926. Apr. 9. Vol. 73. No. 15. pp. 611–614.

i. Observations on the spirochaete-like bodies which occur in blood showed that they were formed from the red blood corpuscles and platelets of both healthy and sick persons. They could be produced by pressure or by merely allowing blood to stand for 24 hours. They were dissolved by pepsin or papain and consisted of protein but not fibrin, lipoid, glycogen or nuclear protein.

C. M. W.

ii. This paper covers the same ground as previous publications by this author Of the figures embodied in the text that representing the lime-cast in the renal tubules is good, as is also the chart showing the blood-changes in experimental infections of guinea-pigs with *L. icteroides.* The reproduction of the rest is not up to the same level

H Harold Scott.

iii The paper, which is a summary of present knowledge regarding spirochaetes, particularly the leptospiras, contains no new information.

C. M. W.

YELLOW FEVER.

HANSON (Henry). **General Report on the Yellow Fever Campaign in Colombia, May, 1923, to December 31, 1924.**—*Amer. Jl. Trop. Med.* 1925. Nov. Vol. 5. No. 6. pp. 393-400.

In 1923 it became evident that yellow fever occurred in Colombia and the International Health Board was asked to cooperate in the control of the disease and its elimination from the country. A commission was appointed under the direction of Dr. Hanson and a comprehensive control campaign put into operation. The centre was Bucaramanga but it was decided to organize work also on the main points on the Magdalen river and the coast. As a result of the operations, which are similar to those carried out elsewhere, it is believed that now (January 5th, 1925) yellow fever no longer exists in Colombia, though outside the actual areas worked the mosquito index is high and the condition such that the greater part of the country would become infected if the disease were introduced. At the present time the safety of Colombia is in the absence of yellow fever from Ecuador, Panama and Venezuela.

C. M. Wenyon.

BRAU (M.). Récentes manifestations de fièvre jaune en Afrique occidentale française. [**Recent Appearances of Yellow Fever in French West Africa.**]—*Bull. Soc. Path. Exot.* 1926. Mar. 10. Vol. 19. No. 3. pp. 237-242. [1 ref.]

Reviewing the outbreaks of yellow fever which have occurred in the colonies of French West Africa since 1922 the author arrives at several conclusions. At Ségou in 1922 most of the victims lived in a house belonging to the Compagnie Française de l'A.O.F.; at Grand Bassam in the same year several cases occurred in the Atlantic Hotel; at Abomey Bohicon in 1924 several cases were grouped around the dwelling of a certain engineer who was himself a victim. Similarly in Liberia, the outbreak, noted in another paper by BOUET, centred round the premises of the Elder Dempster Company, while at Toukoto in 1925 one house harboured three cases of which two were fatal. In all instances succeeding cases occurred within only a short distance of the primary foci. These facts indicate the importance of carrying out the most active anti-stegomyia measures in the immediate locality of the first case. Another point brought out is the mistaken diagnosis of the first cases which are frequently reported as cerebral malaria or similar conditions. The author thinks that a diagnosis clinically made is more likely to be correct than one which is based on a laboratory finding, which may be misleading and lead to neglect of the sanitary measures which otherwise would have been adopted. The three fundamental signs of yellow fever, viz.: the fever, the haemoglobinuric vomiting [? black vomit] and the jaundice, have been recognized from early times. Other symptoms are, however, of value in helping an early diagnosis, which is of such supreme importance from the point of view of prophylaxis. Fever of a continued type is usually the first symptom noted and with it is severe and often intolerable headache associated with marked photophobia. The temperature rarely rises to 104° F. and usually oscillates about 101·1° F. Albumin is constantly present in the urine, which is scanty and highly coloured. BOUET found about

2 gm. of albumin per litre of urine. Early vomiting of alimentary or bilious material, often showing black granules, is a feature which has hitherto not received sufficient attention, but is often described by the patients themselves. It is quite distinct from the characteristic black vomit which appears later. As regards the jaundice it commences on the third day and is first noted in the conjunctivae, a diagnostic sign which, as BOUET remarks, is of special value in the case of the negro. The jaundice reaches its greatest intensity later in the disease and persists with tenacity during convalescence. Though early diagnoses may lead to errors they err on the safe side from the point of view of public health.

C. M. W.

ABBATUCCI (S). Y a-t-il eu des cas de fièvre jaune au Soudan en Octobre-Novembre 1925? **[Was there Yellow Fever in the French Soudan in Oct.-Nov. 1925?]**—*Presse Méd.* 1926. Apr. 3. Vol. 34. No. 27. pp. 428-429.

During October and November 1925 six deaths occurred amongst the European population at Toukoto, Upper Senegal. As some of these cases showed symptoms which might be attributed to yellow fever the disease was reported as such to the Minister for the Colonies. The author of the present note points out that this diagnosis could only be considered for three of the cases but that even in these there is considerable doubt, for no cases occurred amongst the native population, while no systematic search was made for the spirochaetes of relapsing fever which, as has been already noted, can be associated with many of the symptoms of yellow fever.

C. M. W.

BOUET (G.) Une épidémie de fièvre jaune au Libéria. **[An Epidemic of Yellow Fever in Liberia.]**—*Bull. Soc. Path. Exot.* 1925. Nov. 11. Vol. 18 No. 9. pp. 746-753.

During the last week of May 1925 a European became ill in Monrovia and died in four days of a disease diagnosed cerebral malaria. It would appear, however, that the symptoms were those of yellow fever, which was diagnosed by the writer of the paper in six cases attended by him during July and August and in two further cases which occurred in September, one of which was the German Consul General who had, moreover, received two injections of NOGUCHI's vaccine (the second 12 days before he became ill), and the other an American woman who had resided in Liberia for 25 years. The two last cases died on the third and fourth days of the illness while of the 6 cases attended by the writer two died. The writer points out that yellow fever is a disease with which he is familiar and that in his opinion there is no doubt as to the existence of the disease in Liberia.

C. M. W.

HOFFMANN (W. H.). **Anatomical Observations on the Yellow Fever Problem in Africa.**—*Jl. Trop. Med. & Hyg.* 1926. Mar. 1. Vol. 29. No. 5. pp. 69-70. With 2 text figs. [1 ref.]

The author obtained from Dr. YOUNG of Accra kidney tissues from 4 cases of supposed West African yellow fever. It was noted that the severe nephritis and the haemorrhages and blood casts characteristic of yellow fever were not present nor was there any indication of necrotic desquamation of the epithelium or lime casts. Though he admits that the study described is incomplete, the author cannot convince himself that the tissues belonged to cases of true yellow fever.

C. M. W.

LE FANU (G. E. H.) **Yellow Fever at Nsawam—The Case of Mr. C.**—*Gold Coast Rep. Med. & San. Dept. for Period Apr. 1924–Mar. 1925.* Appendix D. p. 66.

The report deals with a case of yellow fever in a European who was suddenly taken ill at Nsawam on July 10th, 1924, and was admitted to the Accra European Hospital on July 15th. On July 13th vomiting of matter "like cocoa" commenced. On admission to hospital the vomiting continued, the sclerae were yellow, the lips cyanosed, and the urine contained cellular detritus and granular casts and gave a heavy deposit of albumen. On July 16th the vomiting continued, there was a black fluid stool and numerous petechiae appeared over the entire body. The condition became worse on July 17th and 18th and there was typical black vomit on July 19th. The urine was scanty and the vomiting continued till the patient's death on July 20th.

C. M. W.

HANSON (Henry). **Personal Experiences in an Attack of Yellow Fever.** —*Jl. Amer. Med. Assoc.* 1926. Feb. 20. Vol. 86. No. 8. pp. 548-549.

The paper is an interesting personal experience of yellow fever contracted by the writer during his work in Peru in 1919. The method of his infection is uncertain though he gives for what it is worth a history of first becoming ill at 2 a.m. four or five days after contaminating a finger with blood from undoubted cases of the disease. He mentions the case of another doctor who developed yellow fever at about the same time 4½ days after pricking his finger at an autopsy. In the author's case the onset showed itself by a strange feeling of uneasiness followed by a peculiar type of sore throat and a taste like that of blood in the mouth. A moderate headache developed, followed by a marked soreness of the back which at first seemed to be localized in two large tender spots over the kidneys. Profound prostration supervened and was accompanied by a feeling of general distress, with sensations of abdominal tenderness in the epigastric and liver regions. Though the temperature was never especially high there seemed to be pronounced toxaemia as evidenced by irregularity of the heart's action. The kidneys almost ceased to function. The prostration continued to be profound up to the 5th day and there were nervous manifestations of alternating excitability and depression. No mention is made of the usual intestinal symptoms, which were presumably absent. Five important points to be observed in the care and treatment of cases of yellow fever are given as follows:

1. Absolute rest in bed from the first onset of symptoms to convalescence.
2. Food of all kinds, even milk or albumins, should be withheld until convalescence is established.
3. A cathartic which is not too drastic should be given as early as possible.

4. As much water as can possibly be **drunk without causing vomiting** should be given.

5. All visiting should be prohibited. **In addition during periods of depression small** doses of a good grade **whisky or brandy and also** small doses of champagne with cracked **ice may be administered.** When food is commenced it should be soft and light **for a period** of two weeks.

C. M. W.

Boez (L.). Travaux récents sur l'étiologie de la fièvre jaune. [**Recent Work on the Etiology of Yellow Fever.**]—*Rev. d'Hygiène.* 1926. Jan Vol. 48. No. 1. pp. 1–23. With 1 text fig. [33 refs.]

As its title indicates, this paper is a review of the subject of the etiology of yellow fever and deals chiefly with the work of Noguchi and others on *Leptospira icteroides* and its relation to the disease.

C. M. W.

Dunn (Lawrence H.) & Hanson (Henry). **Prevalence of the Yellow Fever Mosquito,** *Aedes aegypti* **(Linn.), in Colombia.**—*Amer. Jl. Trop. Med.* 1925. Nov. Vol. 5. No. 6. pp. 401–418. With 1 map in text.

In connexion with the work of the yellow fever commission [see **Hanson** above] information regarding the distribution of *Aëdes aegypti* in various places in Colombia was obtained The present paper describes in detail the evidence of mosquito breeding and its intensity in the 56 localities investigated from this point of view.

C. M. W.

Heagerty (J. J.). **Mal de Siam.**—*Canadian Med. Assoc. Jl.* 1925. Dec. Vol 15 No 12. pp. 1243–1245.

The paper refers to an epidemic which broke out in Quebec in 1710. It was diagnosed as Mal de Siam,* a name given to yellow fever at that time, and there is little reason to doubt that the diagnosis was correct. The author notes that in Allbutt's *System of Medicine* it is stated that yellow fever was epidemic in Quebec in 1805 and in Halifax in 1861, but he has been quite unable to find any record of these outbreaks, though in 1805 the disease was epidemic in New York.

C M. W.

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* "So called because of the general belief in early colonial days that the disease had been imported from Siam It is mentioned by Labat, Chevalon, Desportes, Moreau de Saint-Mery, and other chroniclers of the period and was known by this name in Martinique and San Domingo near the close of the seventeenth century. It is found designated by this name in the old Government and local records of these islands"—Augustin. *History of Yellow Fever.* 1909 p. 79.

From further information in Augustin's book it appears that in consequence of an insurrection in Siam in 1688 a ship-of-war brought French settlers away and, driven out of its course by storms, reached Martinique, after having called (according to one account) at a Brazilian port. In any case, over 100 persons died of *Typhus miasmatique ataxique putride jaune*, the unhandy name by which yellow fever was then known to the French —Ed.

CHOLERA.

YUI (C. Voonping). **A Few Practical Hints for the Clinical Diagnosis and Treatment of Cholera.**—*Nat. Med. Jl. China.* 1925. Dec. Vol. 11. No. 6. pp. 426-433.

The first and most essential step in the successful treatment of cholera is an early diagnosis based on clinical observation rather than on the findings of the laboratory. There are two diseases which may be mistaken for cholera :—" ptomaine " poisoning and acute bacillary dysentery ; but in such cases the process of dehydration is not so sudden or so marked. In early stages, before dehydration, camphor, brandy, chlorodyne, and the essential oils mixture may be given. The last named is very useful in the early stages. [This *Bulletin*, Vol. 21, p. 885 (TOMB).] The author does not recommend this mixture for the later stages of cholera. With collapse saline injections are of most value. If veins are difficult to find transfusion may be performed into the peritoneum or under the breast. After introduction of 2 to 4 pints of saline into the peritoneal cavity veins soon become prominent and intravenous injection can be carried out. Two pints of saline may be injected under the breast of a woman before looking for the veins. Desperate cases need more than 20 pints. It is important to stop transfusion at once if there is any sign of distress or increased frequency of breathing. The author states that no food should be given for 48 hours after transfusion. He also lays down rules for subsequent diet. He draws attention to toxaemia, uraemia, and acidosis, and advises that cholera patients should be kept in hospital during convalescence so long as they are passing cholera vibrios. These may be present for 1 to 6 weeks, and as a carrier the patient will be a danger to the community if he goes home too early.

J. H. Tull Walsh.

MARSHALL (W. J.). **An Account of an Outbreak of Cholera at Goalundo Ghat.**—*Indian Med. Gaz.* 1926. Jan. Vol. 61. No. 1. pp. 4-7. With 1 text fig.

This is in itself a report of an epidemic showing no new features ; but the table is of interest as it shows a general decrease in mortality since 1915.

Year	Admissions.	Deaths.	Mortality.
1915	73	45	61·64
1916	61	26	42·62
1917	55	18	32·73
1918	72	25	34·71
1919	322*	165	51·24
1920	32	7	21·87
1921	84	19	22·62
1922	37	7	18·92
1923	68	5	7·35
1924	34	7	20·85
1925 (up to 28–10–25)	44	4	9 09

* Principally famine-stricken tea-garden coolies.

J. H. T. W.

MARUYAMA (Y.) & KO-RAN. **On the Strains of Cholera Bacilli isolated from this Year's Cases in Taihoku.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. of Formosa*). 1925. Dec. No. 249. English summary p. 7. [In Japanese.]

Cholera infection was carried into Taihoku, from Foochow, on Sept. 25th and Oct. 3rd, 1925. There were eight cases in all, four of which were bacillus carriers. The authors examined the bacilli isolated from these cases and found that they could be divided into two groups according to their immunity reactions, especially agglutination, and that these groups coincided exactly with the grouping of the two outbreaks, each belonging to a different group.

J. H. T. W.

EISLER (M.) & KOVÁCS (N.). Ueber das Verhältnis des Präzipitinogens und Toxins in toxischen Choleravibrionen und deren Beteiligung an dem Flockungsprozess durch spezifische Sera. [**Relationship of Precipitinogen and Toxin of Toxic Cholera Vibrios.**]—*Wien. Klin. Woch.* 1926. Apr. 22. Vol. 39. No. 17. pp. 469-70.

The work of RAMON on the use of a precipitation test for the measurement of the potency of diphtheria toxin and antitoxin implies that the toxin is precipitated by the antitoxin. Eisler and Kovács investigate this point for the toxic (haemolytic) cholera vibrios and conclude that in this case there is no true flocculation of toxin by antitoxin. An adsorption of toxin by the flocculi resulting from the combination—cholera-precipitable substance and cholera precipitin—takes place. Thus toxin disappears from a mixture of toxic bouillon, freed from its bacteria, and specific precipitin serum ; but this is not a precipitation of toxin by antitoxin. It may be equally well produced by the flocculi from the mixture of normal horse serum with its precipitin, if these are added to toxic bouillon.

W. F. Harvey.

TSUNETSUGU (Hiroshiro). [**Experimental Studies on the Transmission of** *Bacillus Typhosus* **and** *Vibrio Cholerae* **into the Rabbit's Gall Bladder.**] —*Keio Igaku* (*Jl. Keio Med. Soc.*). 1925. Apr. Vol. 5. No. 4 [Summarized in *Japan Med. World.* 1925. Dec. 15. Vol. 5 No. 12. p. 358.]

The author always obtained positive results when injecting these bacteria into the veins of rabbits of which the bile ducts had been ligatured. He considers that the appearance of these bacilli in the gall bladder did not originate through the capillary bile tubes, but more probably through the blood capillaries.

J. H. T. W.

MAITRA (G. C.) & BASU (J. B) **Bacteriological Study of Stools of 746 Clinical Cholera Cases in Calcutta.**—*Indian Med. Gaz.* 1925. Dec. Vol. 60. No. 12. pp. 570–571. [7 refs.]

Routine laboratory work—see this *Bulletin*, Vol. 21, p. 887 (MAITRA & BASU).

J. H. T. W.

Fujioka (Nagamasa). [Contribution to the Study of Anti-Infective Value of Typhoid and Cholera Immune Sera.]—*Chugwai Iji-Shimpo* (*Central Med. Jl.*). 1925. Oct. No. 1092. [Summarized in *Japan Med. World*. 1926. Jan. 15. Vol. 6. No. 1. p. 11.]

Gill (C. A.). Cholera in the Punjab in 1925. An Epidemiological Note.—*Indian Med. Gaz.* 1926. Jan. Vol. 61. No. 1. pp. 1–4, With 1 chart in text. [3 refs.] [A Report.]

McKinsky (R. N.) & Zau (F. D.). Cholera Cases treated in the Municipal Isolation Hospital for Chinese, Shanghai, 1925.—*Nat. Med. Jl. China.* 1925. Dec. Vol 11. No. 6. pp. 434–439

Vallipuram (K.) & de Silva (W. R.). Vibrios in Human Excrement.—*Ceylon Jl. Sci.* (Section D. Med. Sci.). 1925. Nov. 18. Vol. 1. Pt. 3 pp. 153–154.

Yamaguchi (Kinji). [On the Relation between the Hemolytic Substances and Agglutinating Substances in the Filtrated Fluids of the Medium cultivated with *Vibrio Cholerae*.]—*Chiba Igakkwai Zasshi* (*Jl. Chiba Med. Soc.*). 1925. May Vol. 3 No 3 [Summarized in *Japan Med World.* 1925. Dec 15. Vol 5. No. 12 pp 359–360.]

PLAGUE

FIERA (Ernesto Ruberti) Die Pestfalle in Mogadiscio im Jahre 1924 und ihre Behandlung [**Plague in Mogadiscio in 1924 and its Treatment.**]—*Arch f Schiffs- u Trop-Hyg* 1926 Feb 1 Vol 30 No 2 pp 51-60

The author describes an outbreak of plague in Mogadiscio, Italian Somaliland Fifteen cases are given in some detail and various forms of treatment are discussed As the result of his experience the author concludes that the first principle of treatment lies in the use of a fresh anti-plague serum combined with injections of camphor-oil, as a heart stimulant, 40 cgm doses daily subcutaneously for 5 or 6 days Buboes should be incised when soft and examined for bacilli

J H Tull Walsh

CRAWFORD (E J) **Bubonic Plague with Generalised Eruption.**—*Trans Roy Soc Trop Med & Hyg* 1926 Jan 21 Vol 19 No 7 pp 405-406 [1 ref]

The author describes, from Nigeria, a case of bubonic plague with generalized papular rash on the hands, feet and pectoral region, with a few spots on the back and face The patient was a young Yoruba woman and the infection was virulent She died In smears from the vesicles an almost pure culture of a bacillus showing bi-polar staining with thionin blue, resembling *B pestis*, was found [*ante*, p 181 (KIRK) and another reference]

J H T. W

JACOB (K K) **Notes on Pustular Forms of Plague.**—*Jl Ceylon Branch Brit Med Assoc* 1926 Jan Vol 23 No 1 pp 31-32

The author describes two cases (1) Indian Tamil female, (2) Indian Tamil male, both suffering from plague as shown by symptoms and the presence of *B pestis* In both cases vesicles and pustules appeared on the legs and trunk Both patients died The author states that he had previously seen a generalized eruption of papules and pustules in a case of bubonic plague sent to hospital as a case of chicken-pox, also petechial eruptions in a case of septicaemic plague Both these cases proved fatal Eruptions in plague are very rare They have no particular distribution They coalesce and appear in any part of the body at any stage of the disease [v this *Bulletin* supra, also Vol 22, p 773 (TEISSIER and others)]

J H T W

NIKANOROW (S M) Die Rolle der Kamele in der Epidemiologie der Astrachaner Pest [**The Rôle of the Camel in Epidemiology of Plague in Astrakan.**]—*Cent f Bakt* I Abt Orig 1926 Mar 1 Vol 98 No 1-2 pp 24-37 With 1 chart in text [3 refs]

The author holds that spontaneous plague in camels and their power of transferring the disease to man have been established in the region of Astrakan. This paper, however, adds little of importance to a former communication (published in another journal) noticed in this *Bulletin*, Vol. 20, p. 359 (NIKANOROFF); see also p. 746 (Titles).

J. H. T. W.

GOSIO (B.). Ueber die Verbreitung der Bubonenpesterreger durch Insektenlarven. [**Spread of Plague by Insect Larvae.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 134-139.

The author describes experiments in which the larvae of necrophilous flies were fed on the liver and spleen of rats or guineapigs which had died of plague. Numerous plague bacilli are found in these larvae. The bacilli pass on to pupa and imago in diminishing number. They do not appear to cause any harm to larvae, etc.; but the author remarks that "during plague epidemics great mortality among flies has been observed." He considers that we cannot ignore such flies as a possible source of infection. [There does not seem to be any evidence of human infection from such a source.]

J. H. T. W.

Comptes Rendus du 5-ième Congrès antipesteux organisé à Saratov par l'Institut de Microbiologie et d'Epidémiologie d'Etat du Sud-Est de l'URSS de 5 à 9 Octobre de 1925. [**Proceedings of the Fifth Anti-Plague Congress at Saratov, Oct. 5-9, 1925.**] In Russian pp. 1-252; 293-301. With 2 maps & 2 plates [French English & German résumés pp. 253-292.]

Most of the scientific contributions to this Conference, dealing mainly with the biology of the susliks(sisels), their fleas and plague among them, have already been discussed in this *Bulletin*. The Conference dealt with the management of the epizootics and the prevention of human outbreaks. The scheme adopted at the 1924 Conference (this *Bulletin*, Vol. 22, p. 382) consisted in early detection of epizootics and the creation of suslik-free belts round the villages near which rodent disease was found. The results obtained by this method in 1924 were apparently good, only one human case being noted as occurring when work was temporarily interrupted. In 1925 the campaign against susliks was not begun early enough, and epidemics occurred at several places.

Some members of the 1925 Conference doubt the value of the above method; others, though admitting its palliative character, urge its further use. At the same time it was resolved in localities where natural boundaries prevent immigration of the rodents, to start measures for their eradication. Two serious drawbacks in the fight are, here as elsewhere, the difficulty of obtaining sufficient funds and the indifference of the population.

Wu Lien Teh & R.P.

JEFTICHEV. Tri Vspishki Chumi v Zabaikalie v 1924 Godu. [**Three Plague Outbreaks in Transbaikalia during the Year 1924.**]—*Guigiena & Epidemiologia.* Moscov. 1925. Vol. 4. No. 3. pp. 75-79.

This paper contains a short description of three limited human plague outbreaks of tarabagan origin. Of interest is the first of these manifestations where a man who beat the flesh of an infected marmot with a hammer, in order to serve it as food for pigs, contracted plague presumably in the *pneumonic* form. [This is the first instance of this kind reported from the tarabagan districts, infection from the marmots usually resulting in bubonic plague with a predilection for the axillary regions].

Wu Lien Teh & R.P.

GOLOV (D.) & JOFF (I.). K Voprosu o Roli Bloch Suslika v Epidemiologii Chumi. [**The Role of the Suslik Fleas in the Epidemiology of Plague.**]—*Vestnik Microbiologii & Epidemiologii.* Saratov. 1925. Vol. 4. No. 4. pp. 19-48. With 9 figs. on 2 plates & 1 text fig. [43 refs.]

Studies of fleas of the pouched marmot *Spermophilus mugozaricus.* Two species (*Ceratophyllus tesquorum* Wagner, and *Neopsylla setosa* Wagner) bite man readily, but *Ctenophthalmus breviatus* could not be induced to do so. The authors succeeded in transmitting plague from infected to healthy susliks with fleas (mainly with *C. tesquorum*); infection occurred evidently through the bite and not through faeces. Infected fleas twice were seen to vomit, and plague bacilli were found in the vomitus. The faeces of infected fleas may contain plague bacilli for a considerable time (as observed up to 79 days at a temperature of 7–10° C. and 92 per cent. humidity), though they bit an infected animal only once, and afterwards fed upon healthy ones. The authors suggest that perhaps the fleas and not the susliks themselves might serve as reservoirs of plague.

Wu Lien Teh & R.P.

GAISKI (N. A.). K Voprosu o Vishivaemosti Chumnoi Palochki v Shkurkach Suslika pri ich Chranenia. [**The Vitality of Plague Bacilli on Stored Suslik Skins.**]—*Vestnik Micro-biologii & Epidemiologii.* Saratov. (*Rev. Microbiol, et Epidémiol.*) 1925. Vol. 4. pp. 15-17. [7 refs.] [German summary pp. 130-131.]

As a result of a small number of experiments, the author comes to the following conclusions:

1. The plague bacillus dies on suslik (*spermophilus*) skins kept in the usual stores in less than three days in summer.
2. When exposed to the sun during dry hot summer weather the bacillus succumbs on the skins in less than six hours.
3. Human infection results from contact with living or freshly killed animals.
4. Disinfection of dried suslik skins is superfluous.

[The above conclusions cannot be generalized. In the case of the tarabagan, e.g., another factor has to be considered, because some of the parasites (lice and even fleas) remain for considerable periods of time on the removed skins.]

Wu Lien Teh & R.P.

NIKANOROFF (S. M.). Ot Borbi s Chumoi k ej Prophylactiki. [**From the Fight against Plague to its Prevention.**]—*Guigiena & Epidemiologia.* Moscov. 1925. Vol. 4. No. 1. pp. 74-80. With 1 map [3 refs.]

Nikanoroff describes an attempt to control plague among the South-Russian spermophiles (susliks) in a more systematic way than hitherto adopted. Through a survey covering a large territory and undertaken by six detachments early in spring, the presence of suslik plague was established in two localities. Here besides free vaccination (which was not very popular) and an educational campaign, destruction of the susliks was carried out on a large scale. The results were most satisfactory. Though both localities were within the endemic area and human outbreaks had been frequent in them in previous years, one of them remained free from human plague whilst in the other only one case was noted, occurring at the time when the work was handed over by the health authorities to agricultural experts.

[It may be remembered that a similar plan was recently adopted in the Los Angeles County (California); whenever squirrel plague occurred, the surrounding country was surveyed in order to find the natural boundaries or "squirrel barriers," confining the spread of the rodents in such an area (built-up properties, streams, areas unsuitable for the squirrels, etc.). Starting from the focus of infection and its immediate vicinity, destruction was carried out within the whole area).*]

The results of such systematic campaigns deserve to be watched with interest.

Wu Lien Teh & R.P.

Maruyama (Y.). Nachtrag zu dem Bericht ueber den Bau der Pestbazillen, ihre Katalasewirkung und ihr Reduktionsvermögen. **[Addendum to the Report on the Morphology of Plague Bacilli, their Catalase Action and Reducing Power.]**—*Taiwan Igakkai Zasshi (Jl. Med. Assoc Formosa).* 1925. Nov. No 248. German summary p. 4. [In Japanese]

1. Neither capsule nor ectoplasm are demonstrable, but the membrane can be shown by methylene blue and dahlia staining.

2. The presence of metachromatic granules has no relation to virulence or to type of medium used. They can be made evident in the bacilli after 20 minutes' boiling. These granules are not essential to division nor are they wholly degeneration products; they are rather normal structures, with greater resisting power to injury than the rest of the protoplasm.

3. Plague bacilli contain granules which stain with Sudan III and oxydase granules. They possess rather a large amount of catalase ferment and have reducing powers.

W. F. Harvey.

Colas-Belcour (J.) Valeur du milieu glycériné dans le diagnostic différentiel des cultures des bacilles de la peste et de la pseudotuberculose des rongeurs. **[Value of Glycerin Medium in the Differential Diagnosis of Cultures of Plague Bacilli and Pseudotuberculosis of Rodents.]**—*C.R. Soc. Biol.* 1926. Feb. 5. Vol. 94. No. 4. pp. 238-240. [1 ref.]

It is difficult to distinguish cultures of the plague bacillus from those of *pseudotuberculosis rodentium.* The former does not ferment glycerin while the latter gives rise to much more abundant growth on glycerin agar and shows definite evidence in 24 or 48 hours of the production of acid on litmus glycerin agar. The pseudotuberculosis bacillus gives a characteristic chamois yellow growth on potato with green coloration of the medium and renders litmus milk alkaline.

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* Dickie, Reports on Plague Eradicative Measures, Los Angeles, 1924–25. Ryan, Paper read at Annual Conference, Californian Health Officers, October, 1925

W. F. Harvey.

KAPSENBERG (G.). Een toevallige bijdrage tot de epidemiologie van de pest. [**An Occasional Contribution to the Epidemiology of Plague.**]—*Nederl. Tijdschr. v. Geneesk.* 1926. Mar. 20. 70th Year 1st Half. No. 12. pp. 1187-1190. With 2 text figs. [6 refs.]

A case where great numbers of *Ceratophyllus fasciatus* in a child's bed prevented sleep although they did not bite. The fleas are supposed —though not actually known—to have come from dead rats in a neighbouring garret. The fact that they did not bite almost persuades the author that *Ceratophyllus fasciatus* may not be of the same importance as *Xenopsylla cheopis* in the spread of plague.

N. H. Swellengrebel.

MAC ARTHUR (W. P.) **Old-Time Plague in Britain.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. Jan. 21. Vol. 19. No. 7. pp. 355-371.

This was an informal address, delivered without notes. No references are given, nor any acknowledgement of borrowed material; but the author stated that, with one exception, all the chronicles named or quoted had been read in the original. It is indeed an interesting address and especially because, as the Vice President in the chair remarked, it tells of matters which are not to be easily found in the plague literature of old times.

J. H. T. W.

WICKERSHEIMER (Ernest). Recettes contre la peste, extraites d'un manuscrit du XV^{e} siècle, ayant appartenu à l'abbaye de Maulbronn. [**Prescriptions against Plague, from a 17th Century Manuscript.**]—*Janus.* 1926. Jan.-Feb. Vol. 3. No. 1. pp. 1-7. [15 refs.]

This is a review of a quaint historical record, a manuscript written by JEAN DE SAXE in the fifteenth century. The remedies are not such as would be used at the present time and some of them must have been very nasty. "Fol. 79v^{o}" provides antidotes in Latin verse, Latin which even the dog could read!

J. H. T. W.

ARISTARKHOVA (O.). Etude épidémiologique d'un foyer pesteux au Sud-Est de la Russie.—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 624-628. [2 refs.]

DA CUNHA (P. A.) Plague at Vasco da Gama. (1923-1924).—*Bol. Ger. Med. e Farmacia.* 1925. Mar.-June. 10th Ser. Nos. 3-6. pp. 49-59.

RUBERTI-FIERA (Ernesto). I casi di peste a Mogadiscio nel 1924. Contributo alla profilassi ed alla cura della peste. Nota preventiva.—*Ann. d'Igiene.* 1926. Feb. Vol. 36. No. 2. pp. 94-104. With 2 text figs.

MISCELLANEOUS.

Proctor (A. H.). **Differential Diagnosis in the Tropics.**—*Indian Med. Gaz.* 1926. Mar. Vol. 61. No. 3. pp. 105-112. [1 ref.]

A valuable paper which any clinician could consult with profit Colonel Proctor takes up in turn three tropical diseases common in India and describes cases in which they have simulated other diseases, his object being to indicate the protean manifestations of the diseases under review. Later he will apply the method to other tropical diseases.

Malaria. The table will illustrate his method;

Usual symptoms ..	362	Cholera	1
Anaemia	4	Difficulty of micturition	3
Vomiting	7	Respiratory conditions	12
Gastric pain	6	Collapse	3
Colic	2	Typhoid state	1
Haematemesis	3	Cerebral and nervous symptoms	7
Diarrhoea and Dysentery	11	Jaundice	4
			426

It gives the symptoms originally complained of by patients admitted to hospital; the special symptoms were the sole symptoms.

A case of "gastric pain" of a month's duration in which the finding of parasites and the giving of quinine gave rapid relief is described; the author believes the pain in such instances to be splenic in origin. A case of renal colic with haematuria and rise of temperature was treated in the usual way till its recurrence on the two succeeding evenings led to a blood examination; after quinine the colic vanished, the suggested pathology is blocking of the renal capillaries by parasites and the passage of blood clots. A Punjabi recruit had symptoms of complete transverse myelitis without fever, deceiving even the elect, but the onset of fever of tertian periodicity gave the clue and quinine supplied the cure. Cases in which the symptoms are those of cholera or collapse are difficult; the author gives the tip that whereas intravenous injection, the thought of the practitioner rather than blood examination, usually results in cholera in the passage of typical cholera stools and fresh vomiting, in malaria this is not the case. The cases most likely to be overlooked are those of general debility and malaise; they are readily cured when the diagnosis is made. Among the lessons of the table are: In every case of vomiting take a blood film or at least examine the spleen.

Owing to the taking of quinine before the consultation parasites cannot always be found; here the quinine test comes in, the rule being that with quinine properly administered a fever lasting more than 4 days is not malarial; the "properly administered" of the author includes a preliminary mercurial purge. The only trap he knows of in the quinine test is the terminal rise of dengue; here we have the slow pulse, etc.

Kala azar. Of 150 cases the primary symptoms in 120 were fever and enlarged spleen, and in the remaining 30 one of ten other signs or symptoms. By far the commonest mistake is to diagnose kala azar as enteric, and so alive is the author to this that he inclines to regard continued fever as kala azar till proved to be enteric. He gives 4 points of difference: (1) the spleen steadily enlarges in kala azar and usually reaches a larger size than in enteric, (2) the patient's general condition is less toxic in kala azar than the duration of the fever would indicate, (3) there is progressive leucopenia and (4) a double rise of temperature in 24 hours; (3) and (4) are the most reliable points. They enabled a case regarded as septic cholangitis to be placed in its true category. Bowel haemorrhage is almost as common in kala azar as in enteric. The author thinks that in von Heyden 471 and urea stibamine we have a valuable therapeutic test. He has not found examination of the peripheral blood of value in diagnosis and he is chary of splenic puncture "unless the spleen is enlarged to a considerable extent and in such cases it would seem hardly necessary." One would conclude that he believes parasitological evidence to be unnecessary but elsewhere he speaks of successful liver puncture. After enteric malignant endocarditis is most commonly confused with kala azar; a cardiac murmur may lead to the belief that the case is one of kala azar arising in chronic heart disease. Cases of fever with haemoptysis, due to Leishmania, have been regarded as tuberculosis and the first case of kala azar shown to the author, in a hospital without microscope, proved to be spleno-medullary leukaemia.

> "It has always seemed curious to me that in a country where pathological conditions of the spleen are common, we scarcely ever hear of splenomegaly due to conditions which prevail in Europe. I refer to splenic anaemia, acholuric jaundice and syphilitic disease of the spleen in infants, to say nothing of the rarer Gaucher's spleen and von Jaksh's disease"

[Similarly, where blackwater fever is found one never hears of other kinds of haemoglobinuria and all elephantiasis in *Filaria bancrofti* regions is filarial.] A case of chronic malaria was recently diagnosed as kala azar. The author points out how easily cancrum oris can be arrested in the initial stage. Inspection of the mouth should be made daily in kala azar. If the thin grey line of ulceration on the gum is treated with carbolic acid and spirit it usually clears up.

Amoebiasis. Of acute amoebic intestinal infections 238 were admitted with the "usual symptoms" and 30 with the addition of fever. In 44 the only symptoms were diarrhoea alternating with constipation, in 5 difficulty of micturition and in 5 appendicitis. In cases of alternate diarrhoea and constipation the stools should be emulsified before examination. A good way of obtaining samples of mucus, according to HINGSTON, is to insert a gum elastic Coudé catheter, and turn it round repeatedly; the mucus is caught in the catheter's eye. In urgent difficulty of micturition it is well to remember that the patient forgets to mention his dysenteric symptoms. Appendicitis and dysentery are frequently confused; the order of appearance of symptoms is here of importance: in appendicitis, pain, nausea, local sensitiveness, fever. "Appendicitis appears to be frequent in cases of dengue . . . The association . . . would seem worth investigating." The author has known carcinoma of the rectum treated as chronic dysentery till secondary deposits appeared in the liver.

Of 33 cases of amoebiasis of the liver 14 had the "usual symptoms," 7 fever only and 5 lung symptoms. The greatest aid to diagnosis is X-ray screen examination. A case of cerebral abscess in Calcutta proved to be a pure amoebic abscess; it was missed although there was a history of dysentery.

Some results of treatment. Quinine taken over long periods may give rise to tachycardia. Sudden attacks of syncope may be due entirely to this drug and are treated by stopping it. Nothing would induce Colonel Proctor to have quinine intramuscularly and he gives a list of disasters he has seen; emetine and arsenic have also their tragedies. Finally he discusses the main points that require attention in diagnosis.

A. G. B.

KOPSTEIN (F.). **The Moluccas.**—*Meded. v. d. Dienst d. Volksgezondheid in Nederl.-Indië.* 1926. Pt. 1. pp. 1-78. With 28 figs. on 14 plates, 2 maps & 7 text figs. [3 refs.]

This long paper contains much of general interest that does not require detailed notice. It concerns chiefly the island of Amboyna (called Ambon in the paper) and three small islands adjacent called the Uliassers. The author was commissioned to visit all the villages in these islands to study the conditions of leprosy there and took the opportunity to make trips to other groups. Amboyna contains 50,000 people and the Uliassers 36,000. The primitive types of houses are described: they are made of sago palm leaves and bamboo; earth floors are almost universal and windows very small, points in favour of the survival of lepra bacilli. Clothes are common property of the inmates. The diet consists of sago and fish; milk and dairy products are practically unknown; rice is scarce and little in demand. No precautions are taken about drinking water but dysentery and typhoid are rare. The removal of faeces and refuse is left to the pigs, hens and dogs; ankylostome infection, however, is scarce. Of these islands Amboyna has the highest percentage of lepers and this is important because the Ambonese travel throughout the archipelago as soldiers, teachers and government officials No effort is made to restrict its spread. In fact, it seems that with the advance of civilization among the natives of the Moluccas the fear of leprosy becomes less. Of 55 villages 33 were found to contain lepers, 299 in all, including 84 in the leprosarium It is noted that whereas the capital contains 26,000 Christians as against 18,000 Mohammedans, there are 4 times as many lepers among the former as among the latter. The explanation is not apparent. In the other three islands the lepers numbered 163. A comparison of the numbers of cases found by NEEB in certain villages in 1901 shows that the lepers have doubled in 20 years. Leprosy has been known in the Moluccas for over 100 years; the history is given of the measures taken by successive governments.

Yaws is universal and children have it as a rule at an early age. "Leprosy causes much less misery than framboesia." A description of the many manifestations is given with photographs. "The number of those suffering from ostitis and arthritis and of those disfigured by the sinking or loss of the nose is very large." Neosalvarsan is known everywhere and is regarded by the native as a cure for all ills. Of juxta-articular nodules 30 cases were seen in a population of 44,000 persons, chiefly in men "of a mature age." Of dermatomycoses, tinea imbricata, t. circinata, t. albigena, and pityriasis versicolor are prevalent. For tinea imbricata neosalvarsan has worked many successful cures; 241 cases were seen in Amboyna, *i.e.*, in 5·5 per mille of the inhabitants. It is difficult to distinguish tinea albigena from some forms of yaws; here again neosalvarsan is useful.

Scabies is prevalent owing to the communal life. Scabies and pediculosis are the chief causes of the frequency of ulcers and furunculosis. Malaria is endemic on all the islands but is not serious; 82 per cent of the children of one village had large spleens, but a comparison, over a series of 20 years, of the deaths under one year in this village and another where the splenic index was 6 shows only an inconsiderable difference. The following species of Anopheles were found: "*Myzorhynchus barbirostris, Myzorhynchus barbirostris* var. *pallidus, Stethomyia aitkeni,* var. *insulae florum, Myzomyia rossi, Myzomyia vaga, Neomyzomyia punctulata, Nyssorhynchus annulipes,* var. *moluccensis*. In Ambon and Piru (Ceram) *M. ludlowi*." Blackwater fever does not occur in the Moluccas.

Tuberculosis is met with in all the forms seen in Europe; acute and chronic consumption, infection of glands, joints, bones and peritoneum; but is nowhere very frequent.

Of the eye diseases conjunctivitis, met with almost exclusively in children, is the most important; it is follicular, gets well without treatment and leaves no trace. Nystagmus is frequently met with, more among children than adults. Venereal diseases are rare and venereal granuloma unknown. Beriberi is very rare; if met with it is in prisons. Smallpox-vaccination is general; the non-vaccinated are found in the Mohammedan rather than the Christian villages; only a small proportion is pock-marked. Of mental diseases amok and latah are in Amboyna quite unknown. Malignant tumours seem to be rare but benign tumours, especially lipomas, are frequent. There is a sparse occurrence of amoebic dysentery; ancylostomiasis and ascariasis are general but of little importance. The last 15 pages are occupied by a discussion of the "population problem of the Moluccas."

A. G. B.

SCIENCIA MEDICA. 1926. Jan. 31. Vol. 4. No. 1. pp. 41-50. With 5 figs. Nosso patrimonio scientifico. O Instituto Oswaldo Cruz. **[The Oswaldo Cruz Institute.]**

The first issue of the current volume of this periodical contains a most interesting account of what is now known as the Oswaldo Cruz Institute, its inception, growth, and the character of the work produced by the staff.

Starting in 1899 in a comparatively small way as an establishment for the preparation of anti-plague serum and vaccine, it was designated the Federal Serotherapeutic Institute and placed under the directorship of Dr. Oswaldo CRUZ. In 1907 it was transformed into an institute of experimental pathology and renamed the Instituto Oswaldo Cruz in honour of its director. On the death of Dr. CRUZ ten years later, his senior assistant, Dr. Carlos CHAGAS, was chosen as his successor and has more than upheld the reputation of his predecessor.

The Institute is a most imposing building, on a Moorish plan, of five floors; one for administration and other offices, two for laboratories, director's, secretary's, and lecture-rooms, a fourth for the library and photographic rooms, and the fifth for sleeping accommodation. The library contains over 41,000 volumes and 1,350 scientific reviews, and there is a museum of entomology, poisonous animals, pathology, macroscopic and microscopic preparations and cultures.

The following subjects are investigated in the Institute: Experimental pathology, hygiene, zoology, veterinary and plant-pathology, applied physiology and chemistry, preparation of biological products, for treatment, curative and prophylactic, of the diseases of man and of animals, and practical courses are given in parasitology, medical zoology, and microbiology.

A list of some of the most important of the 678 works already produced and recorded is given; among them may be mentioned the treatment of leishmaniases, the discovery of American trypanosomiasis, vaccine treatment of symptomatic anthrax and of fowl spirochaetosis, the preparation and uses of d'Herelle's bacteriophage, antivenin for scorpion stings, and the naming and classification of zoological species found in Brazil.

Workers in tropical and subtropical regions owe a deep debt of gratitude to the founder and staff of the Institute, to which the London School of Hygiene and Tropical Medicine will, we hope, in time prove a friendly rival, for there is nothing in the British Isles at present to compare with it.

H. Harold Scott.

STEUDEL (Ernst). Die tropenhygienische Auswertung des Lettow-Zuges. [**The Value for the Tropical Hygienist of the Lettow Campaign (East Africa).**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Vol. 30 No. 1. pp. 76-80.

The remarkable health record of the Germans who took part in the strenuous campaign under Lettow Vorbeck in East Africa, 1914-18, is discussed. The author would ascribe it largely to the gradually increasing training and to selection, a point which he thinks has been insufficiently stressed. There were at the outset 3,000 Europeans. When the "war of movement" began the sick could no longer be treated in hospital, and were handed over with the severely wounded to the enemy. When in November 1917 the Rovuma river was crossed only 291 of the original 3,000 remained, and this number was reduced 10 months later to 168, and at the armistice to 155. Of the original 63 doctors 13 crossed to Portuguese East Africa, and of the 6 who remained at the armistice 2 were almost incapacitated. It is well, therefore, not to make far-reaching generalizations from this campaign. It does, however, show that there are Europeans who are remarkably adaptable to tropical climate. The freedom from sunstroke may be attributed to the compulsory abstention from alcohol. Nocht and others remarked that the tropical diseases and not the climate were the chief enemy [see also this *Bulletin*, Vol. 15, p. 277].

A. G. B.

WEICHBRODT (R.). Beeinflussung der Inkubationszeit bei Infektionskrankheiten. [**The Influencing of the Incubation Period in Infectious Diseases.**]—*Deut. Med. Woch.* 1925. Nov. 20. Vol. 51. No. 47. pp. 1949–1950.

The author, who has taken part in the recent work on the inoculation treatment of general paralysis, has turned his attention to the subject of incubation periods. With the working hypothesis that decomposition of albumen to a small degree cuts the incubation short, and to a larger degree prolongs it, or may prevent infection altogether, he made observations on paralytics under relapsing fever treatment, since with this (in contrast to malaria) the incubation period is a definite one, lying between 3 and 7 days. The substance used for injection was a suspension of killed X_{19} bacilli. Of this an injection was given intravenously, and the patients were inoculated with relapsing fever, either at the height of the fever or after its subsidence. [number of cases not stated] The incubation period was now usually 11-15 days and was generally longer in those injected at the height of the fever. In no case was infection prevented by the injection.

He then gave a patient (March 11th) an injection of malarial and relapsing fever blood simultaneously. The first attack of fever occurred 28 hours later, and malarial plasmodia were detected; he concludes that the fever was due to the parasites. The attacks recurred on the 15th, 17th, 19th, 21st, 23rd and 25th, and in this period no spirochaetes were detected though subinoculations to mice were successful. Quinine was then given for 5 days and again for 4. No further malarial attack occurred, but on April 6th there was a rise of temperature and spirochaetes were found, the attacks recurring on the 14th and 23rd and on the 4th and 10th of May. Here the malaria caused a "depression" of the relapsing fever virulence. The experiment, he writes, raises the question whether the action of malaria therapy in paralysis could not be explained by depression immunity, *i.e.* immunity which produces not the death, but a depression of the virulence of the infecting organism.

He notes that BIFLING and himself have shown that a rabbit chancre can be cured by a non-specific remedy such as X_{19}. Experiments are to be continued.

A. G. B.

DURCK (Hermann). Ueber die mit herdförmigen Gliaproduktionen einhergehenden Erkrankungen des Zentralnervensystems. [**Affections of the Central Nervous System accompanied with Focal Glia Production.**]—*Beihefte z. Arch f. Schiffs- u Trop.-Hyg.* 1925. Vol. 29. No. 1 pp. 43–76. With 36 figs. on 23 plates. [52 refs.]

The author describes three inflammatory processes of glia proliferation that may occur in the brain in malaria, typhus, Chagas-disease, epidemic encephalitis, and pernicious anaemia. The first process, which he regards as defensive—the organism throwing out a living barrier against the entry into the blood-stream of hurtful matter, either living or dead—results in the formation of perivascular nodules of living cells. In the second process the glia-cells proliferate around and phagocytose individual nerve-cells, so that well-defined nodules of glia with a dead core are the result. The third process is a variety of the second; the proliferating glia-cells instead of circumvallating individual nerve-cells spread in ramifying syncytia through the brain, forming a network (Strauchwerkbildung) in the meshes of which the normal histology of the brain is profoundly altered. The article is illustrated by a plenitude of superb plates, of which no less than 10 exhibit various changes observed in malaria brains.

A. Alcock.

MUKHERJEE (Harendra Nath). **Studies in Blood Chemistry of Bengalee Students—Physiological Normals II.**—*Calcutta Med. Jl.* 1925. Oct. Vol. 20. No. 4. pp. 143–148. [12 refs.]

The normal calcium content of serum being by general agreement between 9 and 11 mgm., and the average inorganic phosphorus content (adults) approximately 3 mgm. per 100 cc., these analyses of the blood of healthy Bengali students show no appreciable divergence from these figures. The cholesterol content, however, is considerably below the Euramerican standard. Attention is drawn to the possibility of a corresponding deficiency in Bengali diet.

A. A.

AKASHI (M.). **Some Clinical Observations.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1925. Dec. No. 249 and 1926. Jan. No. 250. English summary pp. 5–6 ; 7. [In Japanese.]

English summaries of Japanese papers by the Director of the Government Hospital, Tainan, Formosa. Of 100 cases of typhoid 27 had hypertrophy of the liver, but only three symptoms of acute hepatitis ; the condition is often overlooked. Many so-called tropical hepatic tumours are, according to the author, malarial. Malarial hepatitis, however, is always mild and suppuration is " extremely rare."

The ineffectiveness of emetine in liver abscess does not exclude the agency of the entamoeba as various kinds of bacilli may accompany it. The author advises the trial of emetine in all cases of acute hepatitis and tropical abscess ; one should not proceed to operation till emetine has failed, and even then should continue its use. In the initial stages of tropical abscess of the liver, he says, emetine will cure 50 per cent of the cases.

A. G. B.

FRANKENBERGER (Charles). **How to Consult the Medical Library and Medical Literature.**—*Long Island Med. Jl.* 1926 Feb. Vol 20. No 2 pp. 37–47.

The Library of the Medical Society of the County of Kings on Long Island is the fourth largest privately-owned medical library in the United States, and enjoys also for its Members the privilege of borrowing from the Army Medical Library at Washington which with its 814,796 volumes and pamphlets is the second largest medical library in the world. In this paper the Librarian describes the history, arrangement, classification and cataloguing of the collections under his charge, and indicates how Members of the Society may best use this storehouse of medical literature. Much of the information is applicable to other medical libraries, and by its aid readers should have little difficulty in looking out from the mass of literature the desired references on any specific subject The more important medical indexes and bibliographic reference helps are set out and explained. For instance, readers wishing to know of the most recent articles on a special subject are referred to the " Quarterly Cumulative Index to Current Medical Literature " published by the American Medical Association. For more exhaustive searches of the medical literature they are advised to consult the " Index Catalogue of the Library of the Surgeon General's Office, U.S. Army " (of which 42 volumes have been published to date), and for the latest references, the complementary volumes of the " Index Medicus " also prepared at the Army Medical Library, and published quarterly by the Carnegie Institution of Washington. These reference works together form the most complete indexes available of the medical literature of the world, and fortunately are to be found in many medical libraries outside the United States. Other publications and special periodicals providing bibliographies and in some cases abstracts upon the subjects to which they are devoted are also listed in the paper, as are the titles of several useful publications on the composition and writing of medical articles, and on the history of medicine

R L S

CHRISTOPHERSON (J B) & GLOYNE (S Roodhouse) **The Biochemical Action of Intravenous Antimony Tartrate Injections.**—*Lancet.* 1926 Jan 30 pp 227–229 [4 refs]

The authors recall the familiar physiological effects of intravenous introduction of potassium or sodium antimony tartrate—chest discomfort and dry cough, constriction in throat, nausea, colic, desire to micturate and headache or dizziness, an occasional result is shock due to individual susceptibility or true anaphylaxis, later may occur rheumatic pains in the joints and even paresis of muscles, coming on some hours after injection, later still, skin phenomena, such as a flush round the site of injection loss of pigment The symptoms and signs which follow prolonged intravenous injections seem to be typically allergic, the patient is intolerant of small non-toxic doses

The authors studied the organotropic effect on man and rabbits Six patients with intractable psoriasis were treated with success in a few weeks in two instances and ultimate success in the remainder The authors consider that the drug acts indirectly through its general physiological effect on the body tissues possibly by some alteration of protein metabolism They examined sections of the viscera from a man suffering from bilharziasis who died after an accidental dose of 13 grs of antimony tartrate, and found degeneration and destruction of the parenchyma of liver and kidneys Four rabbits were inoculated intravenously with varying doses, the post-mortem changes were—dilatation of blood capillaries, effusions into serous membranes, haemorrhages into lungs and spleen retention of urine There was degeneration of the hepatic cells, and to a less extent in the kidney tubules

A G B

KUHN (Philalethes) & SCHMIDT (Hans) Neuere Erfahrungen mit Antimonpraparaten bei Tropenkrankheiten [**Recent Experiences with Antimony Preparations in Tropical Diseases.**]—*Beihefte z Arch f Schiffs- u Trop Hyg* 1926 Vol 30 No 1 pp 89–101. [33 refs]

The authors begin their paper by discussing the drawbacks in the therapeutic use of tartar emetic which have led to the search for a substitute (1) Administration must be by the intravenous route, which is not always practicable in children, a large number of injections is necessary, if the technique is not good unpleasant results follow (2) The toxic effects, since the course is long and the margin between curative and lethal dose not great, this may cause interruption of the treatment (3) An attempt to neutralize the solution brings down a precipitate, and this, if it occurs in the blood, may be the cause of lung complications (4) The instability of solutions (5) Resistance to the the drug

The substitutes studied by the authors are stibenyl, stibosan and antimosan (*ante*, p. 482); in the last the antimony is trivalent, in the others pentavalent. All cure dourine-infected mice with one injection. The margin between the curative and the lethal does is in all much larger than in tartar emetic. They can be given intramuscularly as well as intravenously. The rapidity with which trypanosomes are cleared from the blood of mice varies according as the preparation used is tri- or penta-valent.

The authors review the records of the use of these three drugs in leishmaniasis, malaria, trypanosomiasis, spirochaetosis, leprosy, venereal granuloma, bilharziasis, distomiasis and guinea worm infestation.

A. G. B.

CHOPRA (R. N.). **A Preliminary Note on the Pharmacological Action of some Organic-Antimony Derivatives.**—*Indian Med. Gaz.* 1926. Apr. Vol. 61. No. 4. pp. 162–164. [7 refs.]

In a previous number of this Volume (p. 482) an account was given of the molecular structure of the three types of antimony compounds now being used in the treatment of Kala azar. Of these the most important are derivatives of *p*-aminophenylstibinic acid. $NH_2 C_6H_4 . SbO(OH)_2$, in which stability is secured by replacing one of the hydrogens in the NH_2—group by acetyl and inserting a chlorine atom in the *meta* position ("Stibosan"), by replacing one hydrogen atom by glucose (Stibamine glucoside or Neostam), by carbamide (Urea-stibamine) or by carbamide and glucose (Amino-stiburea). A third carbamido-compound is "Novostiburea" whose composition has not been disclosed. The present paper deals with the pharmacological action of (1) sodium antimonyl tartrate, (2) "Urea-stibamine" (3) "Aminostiburea," (4) "Novostiburea" and (5) "Stibosan" All five drugs produce a fall in systemic blood pressure, a rise in pulmonary blood pressure, a depression of the heart's action, an increase in the volume of the spleen and a decrease in the volume of the intestines, kidneys and limbs. The greatest differences are shown in the effect on respiration which is unaffected or slightly increased by 1, 3, and 4, and depressed by 2 and 5.

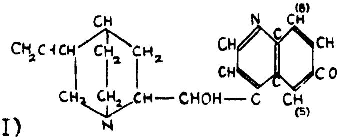
T. A. Henry.

i. KAUFFMANN. Les alcaloides des quinquinas y leur synthese. [**Cinchona Alkaloids and their Synthesis.**]—*Semana Médica* 1926. Apr. 29. Vol. 33. No. 17. (1685). pp. 870–874.

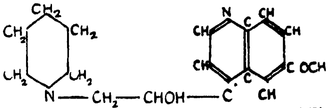
ii. GIEMSA (G.). Ueber zwei in chemotherapeutischer Beziehung beachtenswerte Derivate des Chinins (Aminohydrochinin, Chiteninäthylester). [**Two Quinine Derivatives worth Notice Chemotherapeutically.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1926 Vol. 30. No. 1. pp. 62–66. With 2 text figs.

i. After a short résumé of the history of cinchona and quinine, Dr. Kauffmann points out that the earliest efforts to replace quinine by synthetic drugs resulted in the production of antipyrine, thalline, kairine and other substances, useful in their way, but not effective substitutes for the natural alkaloid. He then describes the attempts so far made to associate the specific effect of quinine (and the allied alkaloids) in malaria with some particular part of the known molecular structure (formula I) generally accepted for quinine. This formula can be simplified to Q—CHOH—Q^1, where Q represents the complex bicyclic system, quinuclidine, and Q^1 the quinoline nucleus.

Such substances as optoquin, eucupin, vuzin, etc. are produced from



(I)



(II)

quinine by reducing the vinyl group CH$_2$: CH. in Q to the ethyl group CH$_3$. CH$_2$. and replacing the methoxy group, C.OCH$_3$ in Q^1 by higher alkyloxy groups. The action of these " modified cinchona alkaloids " in malaria shows that the two groups affected by these changes are not specific. Four of the carbon atoms in quinine are asymmetric, but it seems clear that the specific action of the alkaloid in malaria is not dependant on such asymmetry.

The author and others have synthesized substances of the types (A) R—CHOH—Q^1 and (B) Q—CHOH—R^1 where Q and Q^1 are separately replaced by simpler groups, R and R^1 respectively. Type A (of which a complex example " Neoquin " is shown in formula II) has some action in malaria, but is generally too feeble, and too toxic for use ; Type (B) has been made but has not been tried clinically.

ii. Professor Giemsa points out that in the search for more effective drugs in malaria chemotherapeutists have followed three lines of work : (*a*) modification of known cinchona alkaloids, (*b*) synthesis of new drugs simulating, in whole or in part, the structure of the cinchona alkaloids, and (*c*) development of substances, such as methylene blue and the arsenobenzenes, which have no relation to the cinchona alkaloids. Attention is then called to a series of compounds belonging to group (a) prepared by the author with Dr. HALBERKANN. In hydroquinine the vinyl group CH$_2$: CH. shown in formula I is reduced to CH$_3$.CH$_2$—. From this substance aminohydroquinine with the amino (-NH$_2$) group in the position marked 5 (formula I) is readily produced and from this 5–hydroxy–, 5–bromo–, 5–chloro– and other derivatives are obtainable, and by coupling 5–aminohydroquinone with diazotized *p*–aminophenylarsinic acid a quinine–arsenic compound is obtained in which the group N:N.C$_6$H$_4$.AsO$_3$H$_2$ is attached at position 8 (Formula I).

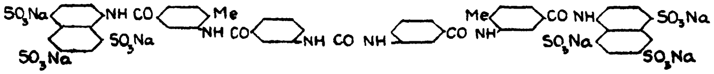
Aminohydroquininine proved less efficient than quinine in malaria : the substances derivable from it are still under trial, but it is interesting to mention that the quinine-arsenic compound appears to be trypanocidal in nagana, a new feature in the action of the quinine series.

When quinine is oxidized by permanganate the vinyl group CH$_2$:CH, (formula I) is converted into a carboxyl group (–COOH) ; giving rise to quitenine (chitenine), which is without action on malaria parasites. If, however, quitenine is converted into its ethyl ester so that the vinyl group CH$_2$:CH of quinine becomes –COOC$_2$H$_5$, the antimalarial action is completely recovered without secondary effects. This preliminary observation opens out many interesting possibilities for future work.

T. A. Henry.

ROEHL (W.) Ueber die Wirkungsweise von Stoffen aus der Reihe des "Bayer 205" **[Action of Substances in the Bayer 205 Series.]**—*Beihefte z Arch f Schiffs- u Trop -Hyg* 1926 Vol 30 No 1. pp 103-111

As this is a communication from the chemotherapeutic laboratory of the Bayer Co it may perhaps be taken as an authoritative view of the mode of action of " germanin " or Bayer 205 The molecular structure of the substance is still undisclosed and on this point the author contents himself with the statement that FOURNEAU regards the drug as the carbamide derived from *m*–aminobenzoyl–*m*–amino–*p*–methylbenzoyl–1–naphthylamino–4 6 8–trisulphonic acid, represented by the following formula



This substance contains none of the metals nor any of the side-chains *e g* NH$_2$–, OH, typically associated with trypanocidal action It is one of a long series of substances prepared in the research, which culminated in the discovery of ' germanin All these compounds are closely related, but some of them are spirillicidal and others trypanocidal and a slight change in structure may mean transference from one group to the other The only difference traceable between the two series is that the spirillicidal group yields insoluble, and the trypanocidal group soluble salts with the alkaline earth metals, especially barium

The rule is not absolute, but is wide enough in applicability to be useful, and it is suggested that the therapeutic action of these substances depends on their capacity for combining, through their sulphonic acid (–HSO$_3$) groups, with basic constituents of the parasitic protozoa A simple carbamide of 1–naphthylamine–4 6 8–trisulphonic acid exhibits trypanocidal action, but to secure lasting effect the molecule must be enlarged to produce a substance having the requisite physical condition to remain for a long time associated with the proteins of tissue cells or blood serum, and so maintain a concentration fatal to the parasites

It is conceivable that there may be optimum molecular structures of this type for different species of animals since the holding capacity of these protein materials may vary with the species This fixation theory implies that there is no toxiphore group in " Bayer 205 " and the allied substances, and that they act merely by combining with basic protein components of the parasites, possibly the chromatin of the nucleus, preventing reproduction and gradually exhausting and killing the parasites, and a number of observations supporting this view are given The fact that trypanosomes can become " fast " to these compounds is explained by assuming a change in the character of the protein components of the parasite , hence the suggestion to use in such cases a toxiphore substance such as antimony, or another and possibly less efficient member of the " germanin " series

T A Henry.

MAKAROWA (Julia) & ZEISS (Heinz) Kolloidchemische Bindungsreaktionen von Germanin an Eiweisskomplexe I Bayer 205 im Toxin-Antitoxin- und Anaphylaxieversuch **[Effect of Germanin or Bayer 205 on the Toxin-antitoxin Combination and on Anaphylactic Shock.]**—*Ztschr. f Immunitatsf u Experim Therap.* 1926 May 5 Vol 47 No 2 pp 110–115 [11 refs]

Bayer 205 alters all the characteristic properties of colloidal protein. The examples given are —

(1) Anticholera serum is deprived of its power of preventing growth of cholera vibrios

(2) The diphtheria toxin-antitoxin mixture, which should give rise to flocculation does not do so A neutral toxin-antitoxin mixture, which should be harmless on inoculation into animals, becomes lethal to the animal after treatment with 2 per cent Bayer 205

(3) Anaphylactic shock in guineapigs is prevented by the addition of 2 per cent Bayer 205 to the shock dose of serum

W F Harvey

PACHECO (Genesio) [In Portuguese & English] Estudos sobre a acção dos colloides metallicos an immunidade **[Studies on t Action of Metallic Colloids on Immunization.]**—*Mem Inst Oswal, Cruz* 1925 Vol 18 No 1 In Portuguese pp 81–117 Wi 12 charts on 6 plates [99 refs] In English pp 119–149

The literature on the subject of the effect of metallic colloids in rega to their bactericidal action and action on the living organism is referr to in some detail The animal experimental work appears to show t intramuscular injection of colloidal silver or rhodium tends to ca decrease of normal agglutinins, increase of artificial agglutinins, and, general, reduction of antitoxic power

In human beings immunized by vaccines the result of injection o colloids was on the whole to bring about reduction of agglutinins

Twelve patients suffering or convalescing from typhoid or para typhoid fever were the subjects of trial of the effect of intravenou injection of colloids Two of these were reserved as controls Th conclusions drawn are, that the injection of colloid itself causes febrile reaction, that specific agglutinins if present are increased, and that there is no effect on the development of the infection

W. F Harvey

FIALLOS (Juan Manuel) **Observations on Castellani's Fermentation Phenomenon.**—*Jl Trop Med & Hyg* 1925 Dec 1. Vol 28 No. 23 pp. 426–427 With 1 text fig [1 ref]

The experiments given are in confirmation of the work of CASTELLANI (*ante*, p 214) Organisms such as *B. typhosus*, *B dysenteriae*, *B morgani* can be made, under certain conditions, to produce gas when grown in carbohydrate media The conditions are stated as .

> "Two bacilli, neither of which causes production of gas in certain carbon compounds, may do so when artificially mixed together provided one of them is capable of producing simple acidity (never gas) in those carbon compounds and the other, though inert on those carbon compounds (viz, does not produce in them either acidity or gas) is capable of producing gas in glucose"

W. F. Harvey.

NEUMANN (Franz). Ueber Geisseldarstellung bei Mikroorganismen im Dunkelfeld, mit Lichtbildern, mikrokinematographischen Demonstrationen von Infusorien, Trypanosomen und Bakterien, sowie Lebendvorführung begeisselter Proteusbazillen. **[Flagella of Microorganisms in Dark Field, Microcinematographic Demonstrations of Infusoria, Trypanosomes and Bacteria, Demonstration of Flagellated Living** *Proteus* **Bacilli.]**—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Vol. 30. No. 1. pp. 125–132. With 9 text figs.

Although the cilia and flagella of living flagellates and infusoria have been demonstrated with comparative ease, this has not been the case for bacteria in dark fields. Neumann has succeeded in overcoming the difficulty. He uses filtered, absolutely clear gelatine solution, or a filtered, clear gum arabic solution for the suspension of the bacilli, together with a condenser which gives a thoroughly good dark field contrast. It is only the longer bacilli which show well-extended, well-separated lateral flagella in dark field. *B. proteus* is a good example. Flagella which have been shed show an extraordinary resemblance to spirochaetes.

W. F. Harvey.

UHN (Philalethes). Demonstration der Ergebnisse morphologischer Bakterienstudien und zum d'Hérelleschen Phänomen. **[Morphological Studies of Bacteria and the d'Herelle Phenomenon.]**—*Beihefte z. Arch. f Schiffs- u. Trop.-Hyg.* 1926. Vol. 30. No. 1. pp. 133–143. With 10 text figs. [8 refs.]

The author has applied the more delicate methods of protozoology to the fixation and staining of bacteria in cultures, thus :—

(1) Cut a square of culture out of an agar plate with a sterile knife ; 2) place on it a thoroughly clean sterile coverglass ; (3) lay the piece of gar culture on 2 glass supports in a fixing dish ; (4) run fixing fluid, such s bichromate-acetic acid, underneath it , (5) allow the fixing fluid to act for 10–15 min., for a piece of agar 2 mm thick , (6) pipette off the fixing fluid and replace it in turn with 75, 50 and 25 per cent alcohol until the alcohol shows no yellow colour ; (7) pipette off the alcohol ; (8) place the whole fixing dish in a moist chamber and leave for several hours or till next day, by which time the bacteria will have become fixed to the cover-glass ; (9) lever the agar off the coverglass with a knife ; (10) place the cover-glass, film downwards, in the solution : Giemsa 12 drops, 1 per cent. pot. carbonate 2 drops, distilled water 10 cc ; (11) stain for 16 hours at 50° C. with one change of staining solution ; (12) differentiate well in acetone ; (13) mount in canada balsam.

Among the bacilli are invariably found peculiar forms which, soon after sowing, are already half the size of the bacteria and can attain an extraordinary size : there are round, oval, extended, and angular forms. They multiply by schizogony and possess a nucleus of quite simple form, and send out amoeboid processes of the most varied character. On account of the resemblance of these structures to amoebae, Kuhn called them at first A–forms. With Zettnow's flagellar stain they show slender and thick thread-like projections which intertwine and form tangled masses. The schizomers soon show differentiation into two kinds, one taking Giemsa stain strongly and the other weakly. These unite sexually to form a zygote in which differential details soon appear. The polar chromatophilic portion forms a large number of granules, which ultimately become free by disintegration of the surrounding structure. The granules grow in size at the expense of the bacteria and attain to that of the original form. The phenomena here described are regarded as representing the cycle of development of a micro-organism to which the name *Pettenkoferia* is given. The growth of the organism at the expense of bacteria is identified with the d'Herelle phenomenon. The author is not certain of the systematic place of his organism, but it is closely allied to the chlamydozoa, or at least to rhizopod-like organisms.

W. F. Harvey.

LINDSAY (Janvier W.), RICE (E. Clarence) & SELINGER (Maurice A.). **A Plea for a Standardized Method of estimating and reporting Hemoglobin Values.**—*Jl. Lab. & Clin. Med.* 1926. May. Vol. 11. No. 8. pp. 737–741. With 3 charts in text. [8 refs.]

An average quantity of haemoglobin, 15 gm. per 100 cc. blood, is given by the Sahli-Leitz, Dare, and Newcomer haemoglobinometers as 100, 109, and 88 per cent. respectively. It is not easy for the practising physician to appreciate the identity of these percentage values. Instruments as supplied by manufacturers are often imperfectly standardized and results obtained with different instruments may show marked variations from the normal. Wong's method is available as a comparatively simple method of standardization for the physician to apply to his own haemoglobinometer. The authors suggest that haematologists should make a practice of reporting the haemoglobin content of the blood in grams per 100 cc. as well as per cent and that 14 to 17 gm. per 100 cc. should be taken as the normal limits They recommend the haemoglobinometer devised by Newcomer, using a standardized glass colour plate, as the most accurate instrument for clinical work.

W. F. Harvey.

MÜLLER (H.). De miltscheuring, hare pathologie en forensische beteekenis. [**Rupture of the Spleen, its Pathology and Forensic Significance.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1926 Vol 66. No. 1. pp. 24–51. [124 refs.]

After a critical review of many cases published as such, the number of possibly spontaneous ruptures of the spleen remains surprisingly small. Müller was unable to find more than 10 in which the rupture could not be ascribed to some sort of violence.

There was confusion about this subject in the older literature, caused by incorrect use of the term "spontaneous," but recent writers with practical unanimity deny the occurrence of spontaneous rupture of the spleen. Müller himself saw 44 cases of rupture in 3 years, in all of which traumatic influences were the ultimate cause. Enlargement of the spleen predisposes to rupture of the organ, but such enlargement is not invariably of malarial origin. The pathologic anatomy of the spleen is discussed in some detail. The larger the spleen, the easier it breaks, partly owing to its unprotected situation, if protruding to some extent from under the costal arch. Lesions by *contre-coup* apparently occur. The violence leading to the rupture generally speaking cannot be described as slight.

W. J. Bais.

i. Radsma (W.). Over de methodiek en de toepassing van het meten der alveolaire koolzuurspanning. **[On the Methods and their Application in Measuring the Alveolar Carbon Dioxide Tension.]**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1926. Vol. 66. No. 1. pp. 80–94.

ii. ——. Over de dagelijksche schommelingen van de koolzuurspanning in de longlucht bij de bewoners der tropen. **[On the Daily Oscillations of the Carbon Dioxide Tension in the Pulmonary Air in Inhabitants of the Tropics.]**—*Ibid.* pp. 95–111. [9 refs.]

i. This is a purely physiological article which should be consulted in the original by those interested in the matter

ii. By application of the technic described in the previous article the author succeeded in showing daily oscillations in the carbon dioxide tension of the alveolar air, which results he summarizes as follows:

1. The curve in the tropics is different from that in Europe.
2. A distinct, sometimes important lowering appears during the morning hours, 1½–2 hours after sunrise, a typical increase in the afternoon, about 1½ hours before sunset.
3. It is very likely that these oscillations are due to direct influence of the sunrays on the body.
4. Eijkman's respiratory metabolism experiments, taken at an average air temperature of 26·7 ° C., are to be completed by similar tests, later in the day in surroundings of higher temperature.
5. The pulmonary ventilation is increased during the tropical day.

W. J. Bais.

REVIEWS AND NOTICES

BEIHEFTE ZUM ARCHIV FUR SCHIFFS- UND TROPEN-HYGIENE 1926 Vol 30 No 1 pp viii +240 With 61 figs & 5 curves Arbeiten aus dem Gebiete der Tropenmedizin herausgegeben von der Deutschen Tropenmedizinischen Gesellschaft [8 Tagung, 1925.] **[Works on Tropical Medicine presented at the Eighth Session of the German Society of Tropical Medicine.]** 1926 Leipzig Verlag von Johann Ambrosius Barth. [Price 9 Rm]

The German Society of Tropical Medicine has just completed the twenty-fifth year of its existence, it has a roll of 278 members, among whom are to be found the most distinguished German authorities on Tropical Medicine This supplement to the Archiv f Schiffs- u Tropen-Hygiene contains the proceedings of the Society at the meeting at Hamburg in October 1925, under the presidency of Professor B NOCHT There are 27 articles or descriptions of demonstrations, some of which are reported in full, and others in a summarized form, together, they cover a large part of the whole field of Tropical Medicine

Professor NOCHT has given a very interesting, though short and general account of the observations he made during the travels of the Malaria Commission of the League of Nations of which a fuller report has been published already

In another paper, it is rather startling to find Professor PLEHN considering the possibility of immunizing emigrants to the Tropics, before they leave Europe, against malignant tertian malaria by repeated injections of malarial blood, the effect of which he claims to be able to moderate and control by the administration of small doses of quinine His suggestion was adversely criticized in the discussion that followed the reading of his paper Dr P H VAN THIEL took up the subject of Professor ROUBAUD'S theory of structural modifications in the zoophilic, misanthropic races of *Anopheles maculipennis* the author's observations give no support to this idea

Professor Ernst STEUDEL'S paper on the hygienic aspects of the experiences of the German troops in East Africa during the war, and the subsequent comments on it, present many points of interest They may be summarized in the statement that, although there are some Europeans who are naturally very highly adapted to a tropical climate, there are very few who can endure the unavoidable exposure and hardships that were the lot of these men Originally, in 1914, there were 3,000 Europeans in the army, at the armistice only 155 remained, the others having died from wounds or diseases, or having been taken prisoners It is worth recording that no cases of sunstroke occurred

Professor FULLEBORN gave demonstrations of the migration of *Ascaris* larvae in the body of the host, and of cutaneous reactions in *Strongyloides* infections

Dr C B HUPPENBAUER spoke very enthusiastically of the merits of Yatren-105 therapy in amoebic dysentery

A recommendation has been sent to the League of Nations, by Dr C W F WINCKEL, that an international survey be made of the distribution of yaws, and that the disease be stamped out by means of salvarsan injections, as was done successfully in Java He appears to have overlooked several obvious objections to this proposal, and, among them, the obstacle presented by the high price of the drug

Professor H WERNER'S paper on Trench Fever compares the results obtained by the British, American and German investigators during the war He considers that the disease was known of old, and quotes the saying of an anonymous author of the twelfth century "Aut habet aut fingit quintanae frigora febris"

There are useful articles on the prevalent diseases of the west coast of Colombia and of Central America by Dr Carl WESTPHAL and Dr Hans ZSCHUCKE.

A very unusual case is described by Professor Victor SCHILLING and Herr WISCHEROPP It is that of a man who clung to a plank for four-and a-half days, after his ship had foundered in a typhoon Apparently as the result of this exposure to sun and water, he suffers from a patchy skin-eruption, a mask-like expression of the face, Raynaud phenomena, hypersensibility of parts of the skin, cardiac disturbances, and a strange loss of the power of regulation of the body-temperature, in this last respect, he behaves very like a poikilothermic animal Neither Professor SCHILLING, nor any of those who discussed the diagnosis, were able to account for this condition

The German Society of Tropical Medicine is to be congratulated on the high standard of the work presented at this meeting

H. J. Walton.

Journal of the Port-of-Spain Medical Society for 1924. 120 pp 2 figs. 1926 Trinidad Govt Printing Office

In deciding to publish its proceedings, the Medical Society of Port of Spain has taken a step which renders a service to the readers of the Journal and at the same time is likely to be a stimulus to the Society's members

There has been talk of a West Indies medical journal, but in the meantime difficulties of communications between the islands and other hindrances have prevented the maturing of the idea and the Port of Spain Society is to be congratulated upon having launched its own publication The first number contains an inaugural address by the Surgeon General of Trinidad, papers on hookworm, diabetes, leprosy, spinal anaesthesia, typhoid inoculation, Dreyer's defatted vaccine, and clinical notes and memoranda, it is by no means of exclusive tropical interest, but ranges over the whole field of medicine and surgery We wish the Society and its Journal success

J. F. C. H.

BERTWISTLE (A. P). [M.B., Ch B, F.R.C S.Ed.] **The Doctor's Books.** 31 pp. With 3 figs 1926. London: John Bale, Sons & Danielsson, Ltd., 83–91, Great Titchfield Street, W. 1. [Price 1s. 6d.]

This little book, the preface states, describes a simple practical method of book keeping, primarily for doctors who keep their own books; the special feature is the Case-Book, the analysis of which may be of great service to scientific medicine since here are recorded the early signs and symptoms As regards the financial books the system for the purpose stated would work well It is single-entry, so that there would be no check on the accuracy or honesty of the book-keeper where one is employed, e g, moneys recorded in the day-book might not find their way into the Cash Book However, with a very little more elaboration the system could be made quite sound by converting it into a Double Entry system, which would provide an efficient check The treatment of returns on a *cash* basis only, advocated by the author, while simplifying it in some cases, would give a very curious result in the case of a new practice, where the doctor only renders his accounts half-yearly The treatment of Bad Debts need not present any serious difficulty as he seems to imagine.

C. N. R.

Zdrodowski (P.). Le paludisme à Mougan (Transcaucasien). L'étude épidémiologique et le plan de la lutte antipaludique. [**Malaria in Mougan (Transcaucasia). Epidemiological Study and Plan of Anti-Malarial Campaign.**]—174 pp. With 13 figs., 6 plans & 1 map. 1926. Moscow–Bakou. [In Russian.]

This publication presents a detailed report on the epidemiology of malaria in the region of Mougan, in the eastern part of Transcaucasia (republic of Azerbaidjan) based on the results of an expedition in 1925 by the author and his collaborators. The first four chapters are devoted to the geography, climate and hydrography of the country. In the fifth chapter a description of the local mosquitoes and their biology is given. The following are the anophelines recorded from Mougan: *Anopheles maculipennis*, *A. elutus*, *A. pseudopictus*, *A. superpictus*, *A. pulcherrimus*, several forms of *Aëdes* (not specified, but one, labelled *Aëdes* M., being regarded as a new species). Chapter six deals with the incidence of malaria. In the course of the survey, 9,494 persons (1,592 Russian settlers and 7,902 native Turkomans), constituting 52 per cent. of the total population, were examined. The spleen index was found to vary from 28.1 to 96 per cent., whilst Ross's index was from 1.4 to 5.5. Microscopical examination revealed parasites in about 32 per cent. of examined cases in the northern section of Mougan, and about 5 per cent. in the south. All the three species of parasite were represented, benign tertian and quartan being predominant. The remaining part of the report contains recommendations for an anti-malarial campaign in this region.

C. A. Hoare.

BUREAU OF HYGIENE AND TROPICAL DISEASES.

TROPICAL DISEASES BULLETIN.

Vol. 23.] 1926. [No. 9

AMOEBIASIS AND DYSENTERY.

AMOEBIASIS.

BROWN (Philip W.). **The Nature, Incidence and Treatment of Endamebiasis.**—*Jl Amer. Med. Assoc.* 1926. Feb. 13. Vol. 86. No. 7. pp. 457–462. With 1 text fig. [18 refs.]

A careful review and discussion of cases observed in the Mayo Clinic.

Group 1. 153 cases showing active dysentery, or liver abscess, when admitted to the clinic.

Group 2 258 cases in which the chief complaint was diarrhoea.

Group 3. 122 cases in which the endamoeba was found without recorded history of dysentery—the pure " carrier " cases.

The cases were investigated by means of · (1) history ; (2) stool test , (3) proctoscopy , (4) barium enema ; (5) gastric test meal. The barium enema and roentgenogram proved of negative rather than positive value. The gastric test meal showed that treatment may be influenced by the results of gastric analysis. Continued diarrhoea without gross evidence of bowel ulceration may be more influenced by achlorhydria than by the coexistent endamoeba Supplementing antiamoebic treatment with dil. HCl. will do much to effect complete relief from the intestinal symptoms.

From this study the author concludes that :—

1. *E. histolytica* is " being heard of " more and more throughout the temperate zone. More attention must be paid to uncooked foods and drinking water supply.

2. Repeated examinations of stools are essential to diagnosis in all forms of dysentery. In this series positive findings (Endamoeba) occurred in 68 per cent. of first, 92 per cent. of second, and 98 per cent. of third examinations. [The author makes no mention of the distinctive microscopic character (cellular) of the bowel exudate.]

3. Proctoscopic examination is absolutely necessary to distinguish amoebic from idiopathic ulcerative colitis.

4. To establish a cure is very difficult ; repeated examinations of stools must be made over a period of months, and reinfection must be prevented.

5 Ipecac or its derivatives are effective in only 58 to 70 per cent of cases

6 Emetine and arsphenamin form a useful combination

7 With the resistant case persist rather than temporize The parasite can eventually be eradicated

The author thinks with ORTICONI and GAZZOLA that *E coli* and *E nana* may be pathogenic in some cases There were cases in which only these two parasites were identified They will thrive in sufficient numbers to produce actual symptoms if the body tissues are altered by factors such as nervous strain endocrine malfunction or dietary deficiency McCARRISON s well known observations on colonic disturbances in monkeys produced by a deficient diet and the intense diarrhoea that then followed introduction of the endamoeba, lend support to this view

H M Hanschell

BITEAU (J P) A propos d une epidemie de dysenterie amibienne autochtone Essai de traitement bismuthique [**An Epidemic of Autochthonous Amoebic Dysentery.**]—*Progres Med* 1926 Jan 9 No 2 pp 47–51

The author gives a summary of his observations on an epidemic of amoebic dysentery 41 cases in a mental hospital a detailed account is promised later No mention is made of the data on which the diagnosis was based

The treatments tried were —

(1) Ipecac a la bresilienne 4 cases Return of stools to normal and disappearance of cysts

(2) *Emetine arsenical treatment* 25 cases Return of stools to normal—and disappearance of amoebae and/or cysts in 10 of the 25 cases Five died The other 10 improved but cysts or amoebae persisted and in one case tenderness of left lobe of liver developed

(3) *Bismuth treatment* 12 cases 0 30 gm Iodobismuthate of quinine injected intramuscularly every 3 or 4 days The stools rapidly decreased in number In 9 out of the 12 amoebae and cysts had disappeared by the 8th to the 24th day after 3 to 6 injections In the 3 cases where treatment failed there was either lambliasis tubercle malaria albuminuria and cachexia as complications The author concludes that the bismuth treatment of amoebic dysentery compares advantageously with other treatments and points out that 3 of the cases in which this treatment caused disappearance of cysts were chronic carriers He notes however that a final appraisement must wait until the cases treated have been longer observed after treatment

[The finding of amoebae and/or cysts in mucosanguineous stools does not by that much declare amoebic dysentery An *epidemic* of amoebic dysentery has not yet been proved to occur anywhere That such an outbreak should happen in a lunatic asylum (the almost perpetual reserve of bacillary dysentery) cannot be accepted without far more exact investigation than is reported in this paper]

H M H

ALBERT (Henry) **Detection of Amebae in Cases of Chronic Systemic Amebic Infection.**—*Amer Jl Public Health* 1926 Apr Vol 16 No 4 pp 352–354 [6 refs]

In view of the great importance of being certain of a diagnosis of ' *Ameba dysenteriae* the author gives a brief outline of directions for the collection of specimens of faeces. The patients should be given bile salts and six separate specimens on six consecutive days be collected and examined. Two methods of preparing specimens for microscopic examination are given: (1) Direct smear stained with iodine-eosin; and (2) fixed smear stained with Haidenhain's iron-haematoxylin. There are so many other amoebae of structure similar to that of "*Ameba dysenteriae*" and other protozoa and cells of somewhat similar morphology, that the diagnosis of dysentery amoebae should not be left to anyone not entirely familiar with their definite recognition

H. M. H.

MORETTI (P). Contributo allo studio dell' amebiasi in Sicilia. [**Amoebiasis in Sicily.**]—*Riforma Med.* 1926 Apr. 26. Vol. 42. No. 17. pp. 388–391 [1 ref.]

Conditions due to or associated with *E. histolytica* in Sicily were a few years ago attributed to sporadic cases coming from the tropics, but the numbers of persons affected have continued to increase and it is now believed that the island is becoming an endemic centre of amoebiasis. The author has himself observed 176 cases and in the present paper these are analysed and divided into different clinical groups. The commonest syndrome is that of a chronic entero-colitis, of which there were 71 instances, or 40·3 per cent. Acute forms, common in the tropics, were seen in 2·2 per cent. only. Twenty-four (or 13·6 per cent) suffered from hepatic complications. This is 3 per cent less than reported by IZAR in 1922, and the diminution is ascribed to greater care and accuracy in diagnosis in the early stages with consequent early treatment. A form of the disease in which there is much wasting is believed to be due to the toxic action of amoebae localized in the submucosa of the intestine and has proved very resistant to treatment One case is mentioned in which the patient suffered from a threefold infection of amoebiasis, syphilis, and undulant fever. The article is of much interest and value.

H. Harold Scott.

CASTEX (Mariano R) & GREENWAY (Daniel). Sur certaines formes et manifestations cliniques peu connues de l'amibiase humaine [**Little-known Clinical Manifestations of Human Amoebiasis.**] —*Bull et Mém Soc. Méd. Hôpit. de Paris.* 1926. Mar. 11. Year 42. 3rd Ser. Vol. 50 No. 9. pp. 376–378. [8 refs.]

The authors, Professors at the University of Buenos Aires, in previous publications had recorded--

1. Of 614 cases of chronic digestive trouble 24·5 per cent. harboured *Entamoeba histolytica.*

2. In a further series of 2,023 cases *E. histolytica* was found in 23·6 per cent.

They note that these figures surpass any hitherto published except, however, those of Mentz von KROG (Oslo), who finds three-fourths of the population of Norway infected with *E. histolytica*. The authors have found that clinical cases of—(1) obstinate constipation; (2) chronic headaches; (3) nephritis (a) with amoebae in the urine, (b) with amoebae in the stools only; both types often accompanied by arterial hypertension; (4) cases with no renal trouble yet with permanent arterial hypertension ; (5) intestinal polyposis ; and (6) a case with Banti's syndrome—all showed *E. histolytica* in the stools ; and all resisted all the usual remedies for their condition and made more or less rapid and complete recovery with emetine treatment and the consequent disappearance of *E. histolytica* from the stools.

H. M. H.

LAMBERTS (W. H.) Beiträge zur Diagnose und Therapie der Amobendysenterie. [**The Diagnosis and Treatment of Amoebic Dysentery.**]—*Klin. Woch.* 1926 Mar. 19. Vol 5. No 12. pp 513–516

The author records the frequency of amoebic dysentery in Central and South America and in the West Indies He describes the various forms of *E histolytica* found in the stools of patients, and the symptoms and physical signs, and blood picture of acute and chronic dysentery and liver abscess Certain diets are recommended Emetine hydrochloride effective in acute dysentery usually failed in chronic cases, in which emetine bismuth iodide gave better results In his experience yatren is the drug of choice for all cases and for hepatitis or small liver abscesses It is not toxic As quinine in malaria, so a like part is to be played by yatren in amoebiasis He points out the prophylactic value of yatren pills

H M H

ABBATUCCI (S.). L'évolution de la dysenterie amibienne en Indochine depuis l'avènement de l'émétine. [**The History of Amoebic Dysentery in Indo-China since the Emetine Epoch.**]—*Presse Méd.* 1926. Mar. 31. Vol. 34. No 26 p 411. With 5 charts in text.

This paper is illustrated by graphs showing cases and mortality from 1903 to 1923. They show (apart from some oscillations during the war years) a steady fall in the number both of cases and of deaths from amoebic dysentery among Europeans and Natives The fall is most marked after 1913, the year in which emetine therapy began. It is claimed that this drug has not only alleviated and cured the disease but has also prevented it —

Thus among the troops —

		Cases	Deaths
Annam-Tonkin			
Europeans	1903	330	25
,,	1923	80	1
Natives	1903	175	18
,,	1923	22	0
Cochin-China—Cambodia			
Europeans	1904	580	75
,,	1923	65	2
Natives	1908	126	18
,,	1923	18	0

and in the same Provinces —

Europeans ... 1912 ... Liver abscess, 48 , deaths, 20.
,, ... 1923 ... ,, ,, 0 , ,, 0

Stricter sanitary measures, however, have also played a part in this betterment.

H M. H.

TRABAUD. L'amibiase camouflée. [**Occult Amoebiasis.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1926. Apr. 22. Year 42. 3rd Ser. Vol. 50. No. 13. pp. 614–617. [3 refs]

Brief description of three types of illness, observed in Beyrouth and attributed to amoebic infection, on the grounds that there was former or present dysentery, or that *E. histolytica* might be found in the stools (according or not to opportunity and frequency of stool examination) ; and mainly that in all three the syndrome disappeared after treatment with emetine.

1. *Forme pseudo-dothiénentérique.*—Typhoid faeces, dirty tongue, gurgling in iliac fossae, diarrhoea, enlarged liver and spleen, continued fever, and sometimes rose or purpuric spots Blood culture negative and no malarial parasites found. R.b.c. 3,500,000, white 10,000-20,000.

2 *Forme pseudo-granulique*—Resembling the preceding in its main features Spots are absent and the fever shows a daily rise with morning remissions. Râles in chest, muco-purulent expectoration Rapid wasting and formation of bed sores Blood culture negative No Koch's bacilli found in sputa Stools dysenteric and history of former dysentery.

3 *Forme pseudo-appendiculaire*—Polynuclear leucocytosis with abdominal signs suggesting appendicitis This type is difficult to distinguish from the cholecystitis (amoebic) already described by the author. The stools reveal *E histolytica,* and emetine should be tried before surgical intervention

H M. H.

BRUMPT (E.) Quelques faits nouveaux concernant les amibes intestinales de l'homme et leur culture [**New Facts concerning the Intestinal Amoebae of Man and their Cultivation.**]—*Le Bull. Méd* 1926. Jan. 27,30. Vol 40. No 5 pp. 105–109

The author first discusses *E. dysenteriae* and its *histolytica* and *minuta* forms. Since the discovery by QUINCKE and ROOS (1893) and HUBERI (1903) of the four nucleated cysts of the true dysentery amoeba, these cysts have been found in many countries—thus in 5 per cent. of the population in England , France over 4 per cent. ; California 26·5 per cent , other parts of U S A. 5–10 per cent , Venezuela 30 per cent. ; Buenos Aires 24·5 per cent. These figures show that four nucleated cysts are as common in the people of countries where amoebic dysentery is a rarity as in those where it is very frequent.

MARTINI (1908) , VINCENT and NOC (1909) , WALKER and SELLARDS (1913) have demonstrated the existence of carriers of dysentery amoebae who show no clinical symptoms. The explanation is lacking why the amoeba produces dysentery in one in four persons infested in the Philippines , one in ten or twenty in Macedonia, Morocco, Senegal, India and Indo-China , while in England, where nearly two million cyst passers exist, only one or two autochthonous cases are observed each year. These surprising epidemiological facts become easier to understand if it be admitted that the work of Sohei SHIMURA (1918) and the author's (1926) show that this widespread four nucleated cyst amoeba is perhaps not pathogenic at all and is a species distinct from *E dysenteriae* This distinct species has been named by the author (1925) *Entamoeba dispar.** A man who had never suffered from intestinal symptoms had travelled before 1912 in Algeria, Spain, and Equatorial Africa. Since 1912 his stools had always shown numerous four nucleated cysts : he remained always healthy. Using the methods that had invariably been successful with true dysentery amoebae, the author always failed to infect cats with the amoebae from this healthy carrier. But on using the method of SELLARDS and THEILER, BOECK and DRBOHLAV (production of intestinal stasis by occlusion of the cat's anus after injection of infected material), the author succeeded in infecting kittens with the amoebae from the above healthy carrier, with the cysts by the rectal or buccal route, with vegetative forms by injecting them per rectum. DRBOHLAV cultivated (1926) these same amoebae and infected kittens with the culture.

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* For a critical study of this species see this *Bulletin,* No 1, p 35.

The author gives a detailed description of *E. dispar* as seen in the kitten, in the human being and in culture, vegetative and encysted forms, living and killed, stained and unstained. Erythrocytes were very rarely found in them in the kittens—never in man or in culture. By the author the vegetative forms are distinguished from *E. dysenteriae* in various minor points—the cysts are indistinguishable. [Readers interested are referred to the paper.]

The exact localization of this amoeba in man is not known. In the kitten they multiply on the mucous surface of the large and sometimes on the last few centimetres of the small intestine, penetrating to the muscularis mucosae which they appear not to traverse. In certain kittens infected also with dysentery bacteria the amoebae appeared to penetrate more readily the mucosa and the submucous lymphatics. They were once found in a follicle of the large intestine but never in the lymph glands of the large intestine. The livers of 38 infected kittens never showed abscess or any lesion that could be attributed to the action of the amoebae. They cause a discrete slow surface necrosis of the mucosa without any of the congestion, inflammatory thickening and ulceration characteristic of *E. dysenteriae* although in far greater numbers in fact than usually found in *E. dysenteriae* infections. Three cats cured of *E. dispar* succumbed later to *E. dysenteriae* culture infection and three cats while still infected with *E. dispar* were superinfected with *E. dysenteriae*. *E. dispar* is distinguished from *E. dysenteriae* by its mode of nutrition in man, by its accidental haematophagy and its pathogenic rôle in the cat, by its appearance in culture, by its vast geographical distribution and by the immense number of subjects in whom it appears. In the human source *E. dispar* vegetative forms were always small and very little mobile at 15° C–20 C—at which temperature *E. dysenteriae* vegetative forms are active. *E. dispar* also is less easily stained than *E. dysenteriae*.

It is clear that the presence in the stools of four nucleated cysts of amoebae in patients with various intestinal troubles does not justify the dangerous treatment with emetine. A description of *E. coli* is given and the paper concludes with an account of the culture of amoebae by BOECK and DRBOHLAV.

H. M. H.

BRUMPT (E.) L'*Entamoeba coli* peut elle être pathogène pour l'homme? Expérimentalement elle peut l'être pour le chat. [**Is *E. coli* ever pathogenic to Man? Experimentally it is to Cat.**]—*Bull. Acad. Med.* 1926. Mar. 16. Year 90. 3rd Ser. Vol. 95. No. 11. pp. 284–293. With 5 figs.

In the stools of a human case of mucous diarrhoea there were still present, after treatment, cysts of *E. coli*, *E. dispar*, *Endolimax nana*, and *Giardia intestinalis*. The stools had never revealed *E. dysenteriae*. The patient was purged and some of the resulting stool injected into the rectum of kitten No. 1, whose anus was then collodion sealed for 48 hours. The animal developed diarrhoea and its stools showed numerous non-haematophagous amoebae and some *Trichomonas felis.* On the 5th day after the injection the ill animal was killed. Autopsy revealed an invagination of the small intestine occluding the gut. The large intestine showed superficial ulcerations. The mucus from gut revealed non-haematophagous "*E. dispar*" and *E. coli*; (the types found are illustrated). Kitten No. 2 was injected at the same time as No. 1 with the same material and by the same method. Scanty "*E. dispar*" only were found in its stools, and later these disappeared altogether; the animal meanwhile had kept well and put on weight. It was then injected with *E. dysenteriae.* Dysentery was produced, and autopsy revealed the typical amoebae, ulcerations, and tissue invasion.

The author gives a brief review of the experiments and observations of others on the pathogenicity of *E. coli*—notably HAMMERSCHMIDT's finding of *E. coli* deep in the wall of ileum, caecum, and in Lieberkühn's glands, at autopsy on 2 cases of typhoid fever and a case of leukaemia [*ante*, p. 374]. The author notes that further experimental study can alone interpret more accurately the facts observed; and suggests that so far his experiments show that *E. coli* can, perhaps in exceptional circumstances, penetrate small ulcerations which it may have itself produced, or which were first started by co-existing "*E. dispar*"

H. M. H.

WILLMORE (J Graham) & MARTINDALE (W. Harrison) **The Treatment of Amoebic Dysentery by Auremetine.**—*Brit. Med. Jl.* 1926. Mar 20. pp. 525-527 [3 refs].

The authors reported in May 1923 results of treatment in a series of 503 cases of amoebic dysentery [see this *Bulletin*, Vol. 20, pp. 708-10]. Treatment consisted in 12 grains emetine intramuscularly and 60 grains E B.I per os in 20 days; emetol (solution of emetine base in olive oil), given per rectum; and emetine periodide by mouth. With all these, however, more than one third of the cases had relapsed in less than six months, and a much larger proportion have relapsed since.

Extensive trial was then given to drugs such as activated quinine base, conessine, stovarsol, Bayer 205, a varied group of so-called intestinal disinfectants, flavine, etc. Results confirmed their previously expressed opinion that radical cure must centre round some form of emetine. Yatren per os and per rectum, in four refractory cases, had no effect even as a temporary palliative. (There had been no opportunity of trying it by appendicostomy.) Emetren (Yatren emetine compound for intramuscular injection) failed in the one case in which it was tried. Stovarsol combined with emetine preparations gave decidedly better results than either drug singly.

FAIRBROTHER and RENSHAW's work on the potentialities of the aniline dye auramine prompted the preparation of a compound of auramine with emetine for oral use. This compound, for which the name *auremetine* is suggested, is a dark maroon powder, stable and insoluble in water. It is a combination of the hydriodide periodides of emetine and auramine with the approximate composition:

Emetine	28 per cent.
Auramine	16 per cent.
Iodine	56 per cent.

Tested by Major BROWN it was found inhibitory to the growth of free living amoebae nearly to the same extent as emetine or conessine under the same conditions *It is to be noted that the drug contains only 28 per cent of emetine, the constituent most poisonous to the higher animals* Tests of the effect on auremetine of physiological acid and alkali showed a slow steady decomposition with freeing of emetine and the dye, probably in the human intestine a more ready decomposition occurs, since administration is quickly followed by passage of orange coloured faeces Its use per os has been found free from vomiting nausea abdominal pain purging It is much less depressing than hypodermically administered emetine

Bismuth subnitrate in massive doses (as recommended by JAMES and DEEKS) has been found to be a valuable adjuvant to any and every form of specific anti amoebic treatment and particularly so in that now to be described Though continued for months it has caused no symptoms of poisoning The auremetine treatment (modified to suit individual cases) was roughly as follows —

1 *Acute cases* (*a*) Auremetine 1 gr in soft gelatin capsule four times daily after food on alternate days for 7 days and then daily to a total of 40 or 60 grains ingested (*b*) Stovarsol 4 grs t i d daily for 7 days on alternate days with the auremetine (*c*) on stovarsol days a rectal injection of emetol 2 drachms 1 grain emetine base) in 6 drachms ether and 12 oz olive oil (*d*) bismuth 1 drachm 3 hourly for 20 days and ter in die daily

2 *Chronic or cyst carrying cases* were given (*a*) auremetine and (*b*) stovarsol on alternate days as described above (*c*) bismuth 1 drachm ter in die before food

It is necessary to control all cases by routine sigmoidoscopy Eight cases of carcinoma developing in site of amoebic ulcer have been seen during the past five years Areas of submucous amoebic infiltration from which teeming amoebae may be scraped may be found although repeated microscopic examination of stools had been negative Some individuals show idiosyncrasy towards stovarsol especially after repeated courses One death from this drug has been heard of and one case under treatment developed intense dermatitis with purpuric spots after only 8 grains As a minor precaution patients were given glucose daily during stovarsol treatment

It is to be noted that the cases of amoebic dysentery dealt with were the residue of pensioners infected during or before the great war many of whom had been through every dysentery centre in the country The authors claim no more than that the introduction of auremetine and the above methods of treatment have given some gratifying and more hopeful *immediate* results than any other essayed The table accompanying this paper gives the results of this treatment In the results column Responded has been deliberately chosen as being less committal than any other It is meant to convey that the patient regained his health lost all clinical signs and symptoms of his disease (including sigmoidoscopic findings) that his stools were negative on repeated examination and that he had remained free from any evidence of infection for at least six months after completing treatment The Responded' results in the table give unquestionable justification for the rather modest claim for the efficacy of this treatment put forward by the authors—and especially so if one notes the type of case dealt with

H M H.

DEUSKAR (V N) **A Note on the Use of Emetine Intravenously.**—*Indian Med Gaz* 1926 Apr Vol 61 No 4 pp 165–167

1 June-December, 1925, Haddo Hospital Port Blair, 70 cases of amoebiasis (active *E histolytica* present in all) were treated by emetine intravenously and Deek s bismuth therapy case mortality 12½ per cent

2 Nine one grain emetine injections on consecutive days, 6 days interval and then 6 more intravenous injections of one grain of emetine — each patient thus received 15 grains of emetine

3 The series included cases with as low a weight as 83 lbs and as low a haemoglobin value as 40 per cent, also cases anaemic and debilitated in consequence of coexistent infections e g acute and chronic malaria bronchitis ankylostomiasis sprue

4 No toxic symptoms due to the intravenous emetine were noted, and it was painless

5 Provided that total emetine so given does not exceed 12 grains and rest in bed can be enforced this form of treatment might safely be extended to patients in private practice

6 It is still undetermined whether intravenous emetine gives better therapeutic results

7 Meanwhile —P M examination of the fatal cases revealed extensive thickening and fibrosis of the gut Some relapses also occurred within 46 to 136 days Results therefore appear as disappointing in chronic cases under this treatment as with any other form of emetine therapy

H M H

RAVAUT (Paul) Les arsenicaux par voie buccale dans le traitement la prophylaxie la prevention de l amibiase et de diverses infections intestinales efficacite de l arsenobenzol (606) **Arsenobenzol by the Mouth in the Treatment and Prophylaxis of Amoebiasis and other Intestinal Infections** —*Presse Med* 1926 Apr 21 Vol 34 No 32 pp 497–499 6 refs

In 1915 the author cured a case of chronic amoebic dysentery in which emetine and arsenic injections had been of no avail by giving by mouth doses of 10 and 20 cgm of novarsenobenzol dissolved in water Motile and encysted amoebae disappeared from the stools In this paper he reviews his further experience of this therapy While emphasizing that his experience has been obtained with a somewhat limited number of cases yet so successful has it been that warrant is thereby given for his plea for its careful testing on a larger series of cases

In the treatment of amoebiasis he divides cases into two groups each requiring its distinctive therapy Acute and subacute cases must be treated by injections In chronic cases with encysted parasites *cyst sowers'* recourse must be had to local treatment by the buccal route and it is especially in these last that strikingly successful results as measured by disappearance of all forms of the parasite *including cysts* and return of general health to the patient are obtained by means of the original arsenobenzol 606 given by mouth (It causes also the disappearance of free and encysted *Lamblia* though for this a longer course of treatment is required) It may be given in solution in water or more conveniently in tablets made up with gluten, *which should be crushed before swallowing,* (sold as Narsenol tablets)

10 cgm in each tablet 5 or 6 of these are given in the first 24 hours, after which the dose is lowered to 2 or 3 tablets a day for several days. The fact that cysts are destroyed by this medicament opens the way to effective prophylaxis of the disease, and as he has found by actual experiment that over a long period of time 10 to 30 cgm can be safely taken by mouth twice a week, it is possible by this means (as with quinine and malaria) to prevent individual infection He cites in support PFTZETAKIS' experiment—failure to infect with dysentery amoebae a human being who was taking stovarsol per os Dr Ravaut believes arsenobenzol to be superior in anti-intestinal-protozoal effects to stovarsol and E B I. He notes clearly, however, that no one remedy is ever invariably successful Each of these remedies will on occasion be found best for some particular type of patient

For the control, and even eradication, of amoebiasis in endemic areas arsenobenzol by the oral route holds out now the best chances of success

H M H

BUCHMANN (Max) Behandlung von Amobendysenterie bei Erwachsenen und Kindern mit "Yatren 105" **[Treatment of Amoebic Dysentery in Adults and Children by Yatren 105.]**—*Arch f Schiffs- u Trop-Hyg* 1926 Apr 1 Vol 30 No 4 pp 148–157

Observations on the comparative merits of Yatren 105 and emetine therapy, in a rather small number of cases of amoebic dysentery in adults, infants and small children, occurring in Tiberias, Palestine Brief clinical notes of typical cases are given

The author concludes that yatren (per os and per rectum) is preferable to emetine for adults in whom the amoebic dysentery is chronic and resistant to treatment or in whom there is some other concurrent disease, especially heart disease or in whom general debilitation is marked Yatren can also be used (and emetine should not be) for ambulatory treatment of adults In hi experience emetine is dangerous for infants and small children He has seen death follow its use in them Yatren per os (or per rectum) is safe and its effects so good that when further experience shall have disclosed the best dosage it must entirely supersede emetine for children just as it has now displaced emetine for all cases of chronic amoebic dysentery in adults

H M H

RUGE (Reinhold) Tratamiento de la disenteria amibiana **[Treatment of Amoebic Dysentery.]**—*La Medicina Germano-Hispano-Americana* 1926 Vol 3 No 5 pp 353–356

The advantages of yatren 105 in the treatment of amoebic dysentery are highly lauded It proved serviceable in the author's hands in acute and chronic cases, and amelioration was noticed within 24 hours The dose is 3 gm daily in divided doses, in pill-form, and cure rarely needs longer than 8 to 10 days, though it is advisable to give another shorter course of 3 gm a day for five days after an interval of 3–4 weeks If desired, yatren may be administered *per rectum*, as an enema of 200–400 cc of a 2–2½ per cent solution in warm water The enema should not be too large as it acts better if retained throughout the night The drug was also found useful in amoebic hepatitis

H Harold Scott

BACH (F. W.) & STEINHAUER (H.). Ueber einen 27 Jahre alten Fall chronischer Amöbenruhr und dessen Heilung durch Yatren sowie Bemerkungen ueber das Vorkommen von Amöbenruhr und die Verbreitung der Ruhramöbe in Deutschland. [**Case of Chronic Amoebic Dysentery of 27 Years' Duration. Cure by Yatren. Occurrence of Amoebic Dysentery in Germany.**]—*Muench. Med. Woch.* 1926. May 21. Vol. 73. No. 21. pp. 865–866. [17 refs.]

DOBELL has described a case of amoebic dysentery persisting for 16 years, and HUPPENBAUER one for 17 years. The authors' case had persisted for 27 years Its interest lies in the fact that after this long infection it was cured by yatren, and also that the long period during which its true nature remained unrecognized has a bearing on the question of the occurrence and spread of amoebic dysentery in Germany. The patient, a man aet. 55 years, contracted dysentery in Alabama in 1898. Many relapses since then In 1922 carcinoma of intestine was suspected, but operation did not confirm this. In 1925, sigmoidoscopic and microscopic examination, following a severe relapse, revealed amoebic infection. Numerous *minuta* forms were found, and many one, two and four nucleated cysts. Treatment was mainly by yatren per os. Rapid and complete restoration to bodily health resulted and 5 months later cysts and *minuta* forms were still absent from the stools.

With regard to the occurrence of amoebic dysentery in Germany, the authors note that French authors reported the disease in France and Lorraine, that German cases had occurred recently, apparently infected by contact with individuals who had suffered from "dysentery" in France during the war and at a time when there was no epidemic dysentery Furthermore, in Germany there are quartered to-day foreign colonial troops.

FISCHER in 1919 reported an autochthonous case in Göttingen and others, including the authors, have reported cases since then. Many sporadic cases of dysentery have not in fact been investigated to determine whether they were amoebic or bacillary Amoebic dysentery can be diagnosed with certainty only by microscopic examination of stools When this last becomes more general in Germany, it is very probable that amoebic dysentery will be found to be more common.

H M. H.

JUAN RIVERO (A) Tratamiento de la disenteria amibiana por el stovarsol [**Treatment of Amoebic Dysentery by Stovarsol.**]—*Rev. Méd de Yucatán* 1925 Dec. Vol. 13 No. 10. pp 141–146.

Details are given of six patients, whose ages ranged between 19 and 50 years, suffering from dysentery. The disease was believed in each instance to be of the amoebic variety, but on clinical grounds only Stovarsol, 1 gm daily at first, 0 75 gm. later, led to rapid amelioration, perhaps cure, in all but one. This was a man of 22 years, ill for 3 months with malaria and dysentery A course of 6 gm of stovarsol was given without result. This was then replaced by emetine, which also proved useless, so a second course of 5 gm. stovarsol was given, but death followed. One patient improved so much in 3 days that she did not return for further treatment till a relapse came on 3 weeks later, when another 3 gm. in 3 days led to a cure ; at all events, there had been no further relapse at the time of writing No definite statement is made as to the mode of administration ; apparently it was taken by mouth.

H. Harold Scott.

VAN DER SPUY (A J) **Acriflavine in the Treatment of Chronic Amoebic Dysentery.**—*Jl Roy Army Med Corps* 1926 June Vol 46 No 6 pp 424–429

The author states that at the present time statistics indicate that 20 per cent of acute cases of amoebic dysentery become "chronic carriers and potential sources for the outbreak of fresh infection Eradication of this focus of infection is of primary importance in preventive medicine He now reports the clinical history of 4 cases

Case 1 After two attacks of amoebic dysentery, was operated on for large abscess in left hepatic lobe after emetine injections had failed to improve the patient s condition The abscess was evacuated and its cavity swabbed with flavine solution (strength unknown), some of which was left in the cavity and wound closed without drainage Six months later the patient was still on duty apparently fit

The other three cases had all suffered from more than one attack of amoebic dysentery for which they had received emetine injections All were amoebae and cyst carriers In all appendicostomy was performed and the large intestine washed out through the appendicostomy opening with acriflavine solution 1/5 000 in water In two of the cases other lotions, such as protargol and zinc sulphate, were also used for the appendicostomy lavage All the cases made good recoveries In two ten consecutive examinations of the stools revealed no amoebae or cysts

H M H

ANDRESEN (Albert F R) **Amebic Colitis. Its Treatment by Trans-Duodenal Medication.** *Amer Jl Trop Med* 1926 Mar Vol 6 No 2 pp 119 122

The author states that in amoebic dysentery the active amoebae are protected from destruction by the plugging up of the ulcers with debris This plug can be removed by the transduodenal enema Powdered ipecac given through the tube immediately after the ulcers are cleaned out can get in its effect where most needed Emetine given hypodermically may be a useful adjuvant The technique followed is

1 Lacto farinaceous diet frequent feedings for 2 or 3 days preceding and throughout course of treatment

2 In the morning after 12 hours fast regulation duodenal tube is passed well into patient s duodenum its location being determined preferably by X ray The tube may have to be passed the night before where much pylorospasm exists

3 The pylorus is encouraged to close by giving patient 4 or 5 ounces of cold milk to drink alongside the tube

4 500 cc of 10 per cent aqueous sol of sod and mag sulph at temperature 105° F is run slowly through the tube into the duodenum This produces copious watery evacuation in 20 to 30 minutes cleaning out ulcer bases very satisfactorily

5 20 minutes after giving the hypertonic salt solution there is poured down tube a suspension of 1 drachm powdered ipecac in 50 cc plain warm water followed by 50 cc plain water to wash out tube Tube is left *in situ* for 1 hour as in its withdrawal a little ipecac might be carried into stomach and cause persistent vomiting

6 1½ to 2 hours after the ipecac the patient resumes his feedings, which are pushed, even though no appetite be present

7. These treatments are repeated daily for 7 days, and are followed by an interval of 7 days, and then another 7 days course of treatment

It is suggested that "this method be given a trial where a careful check-up would be available"

H M H.

JOBSON (E W C) **Three Cases of Liver Abscess.**—*Kenya Med Jl.* 1926 May Vol 3 No 2 pp 55–57

Case I *Drainage by transpleural route*—A tender oedematous swelling over right ribs in anterior axillary line fever Exploring needle inserted 1 inch of 9th rib excised and large abscess in right lobe of liver opened and drained by rubber tube. Emetine and E B I treatment Patient reported quite well four months later

Case 2 *Rupture into lung*—Two months pain over liver right shoulder pain, occasional fever *Emetine injections given from 18th day after patient came under observation. Eleven days later patient coughed up typical liver abscess pus* Eventual apparent cure after courses of emetine treatment

Case 3 *Drainage by abdominal route*—Painful liver extending 3 finger-breadths below costal margin, fever Abscess explored and drained through abdomen Emetine treatment Four months later patient appeared quite well

All above three were natives of not more than 30 years of age Only one emaciated None gave history of dysentery or diarrhoea

Notes of 6 other cases in natives are given Case 6 was a young native under observation for some months during which he progressively lost weight without discovered cause Diarrhoea five months previously Pain developed at level of 10th right rib in anterior axillary line No improvement followed a course of emetine injections Twelve exploratory punctures of liver failed to find pus Then second course of emetine was followed by marked gain in weight loss of pain and eventual complete recovery In this case there was arthritis of both knees

KHAN (Matloob) **Two Interesting Cases of Liver Abscess.**—*Indian Med Gaz* 1926 Mar Vol 61 No 3 pp 124–126

Case I Large liver abscess This (perhaps knowledgeable) patient, a Hindu cultivator, aged 46 years, on the fifth day of emetine injections stoutly insisted on some surgical procedure He did not think as things were, that he was being properly treated Accordingly, by hypodermic syringe 1 cc only of pus was withdrawn and shown to him Further aspiration was as stoutly refused by the author, who continued treatment by emetine injections In all, the patient received 24 injections, 1 grain each subcutaneously, of emetine hydrochloride 85 days after admission to hospital patient was working in the fields with no sign of liver enlargement and apparently in sound health

Case II Hindu girl aged 14 years Liver abscess bursting into right lung with secondary pneumonia As her parents refused to allow her to go into hospital, she was brought daily for treatment She was given daily for 12 days, hypodermically, emetine hydrochlor gr 1 A further course was advised, but patient did not attend for it Improvement followed steadily on the injections When last seen, on the 74th day after first injection, she was at work and apparently well, but liver was enlarged to 3½ finger-breadths below costal margin and slightly tender on deep pressure

H M. H.

PONTANO (Tommaso.) L'ascesso epatico amebico. [**Amoebic Hepatic Abscess.**]—*Policlinico.* Sez. Med. 1926. Apr. 1. Vol. 33. No. 4. pp. 177–202.

This contribution forming an excellent account of amoebic hepatitis, is divided into several sections dealing successively with the pathogeny, pathological anatomy, clinical symptoms and treatment. The author's opinions may be summed up as follows :—(1) Amoebic abscess of the liver is due to localization of the *E. histolytica via* the portal radicles and should not be regarded as a *complication* of dysentery in all cases. (2) Hepatic abscess is due to definite colliquative necrosis resulting from the presence of the amoeba and not to any pyogenic process analogous to bacterial action, for material removed by puncture shows cellular detritus, not organisms and polymorphonuclear cells (3) Treatment of the condition is fundamentally medicinal, by emetine, whether the abscess is of recent or remote formation, large or small, whether the general condition of the patient is good or bad. Only if organisms have gained entrance and the necrotic process has become converted into a true purulent one, or if perforation occurs into the peritoneal cavity, are surgical measures called for or justifiable. If the abscess opens into the lung, medicinal means are sufficient Generally speaking, operation is no more warranted in amoebic abscess than in gumma of the liver.

H. Harold Scott.

MANSON-BAHR (Philip) & MORRIS (R. M.). **Emetine in the Treatment of Hepatic Abscess.**—*Lancet.* 1926. Jan. 9. pp. 69–70. [4 refs.]

The authors note that injections of emetine, when combined with surgical measures, in liver abscess appear to exert a distinct effect in promoting absorption of pus and obliteration of abscess cavity. It is generally conceded that in hepatic amoebiasis emetine is more efficacious in extirpating *E histolytica* than when this parasite invades the bowel wall.

It has been claimed by some that even without surgical interference, emetine injections can cure amoebic liver abscess and bring about absorption of even large quantities of pus, on the grounds that there is a close analogy between amoebic liver abscess and gumma or tuberculous abscess, and that the first should therefore be treated on similar medical lines.

Clinical records of two cases are given

Case 1. Liver abscess 7 years after date of presumable infection. The recurrence of a third abscess after two successful operations ; the apparent recovery on emetine treatment without aspiration ; and the eventual demonstration of a large amount of pus in the liver *at a time when all ascertainable signs and symptoms* of liver abscess had disappeared.

Case 2—showed conclusively that emetine injections did not in any way prevent the reaccumulation of pus in the liver abscess cavity. (This case was under Dr. G. C. LOW.)

The authors disclaim any discountenancing of the value of emetine in the treatment of liver abscess, but rather they emphazise that it is only to be used as an adjuvant to the surgical measure of aspiration. The rapid effect of emetine in acute amoebic hepatitis is probably due to its action upon the amoebae themselves, and to its effect was probably due the fact that, in the two cases reported, no amoebae were found in the pus evacuated from the liver; but there are no grounds for believing that, under ordinary circumstances, emetine in any way hastens or affects absorption of pus already formed within the liver.

H. M. H.

Hodson (V. S.); Manson-Bahr (P. H.); Thurston (E. Owen). **Emetine in the Treatment of Hepatic Abscess.** [Correspondence.]—*Lancet* 1926. Mar 27 pp. 681–682; Apr. 10. p. 784.

Hodson claims that emetine alone is sufficient to cure hepatic abscess. Had the condition been called anything but abscess, and ipecacuanha been properly appreciated as a therapeutic agent, it is very doubtful if surgical interference would ever have reached its recent importance in these cases. In origin the "abscess" is secondary to bowel infection; is not circumscribed, its inner surface is extremely irregular; contents sterile; causative organism in the tissues—in fact, from every point of view exactly analogous to a gumma Obsession with the pyogenic abscess idea obstructs belief that absorption of contents of "hepatic abscess" is possible; but compare cross section of the myriad lymphatics of liver with that of the aspirating needle

Aspiration need not be necessary before diagnosis of hepatic abscess. can be made, he has published record of case in which, though unproved by aspiration, the abscess ruptured two hours after treatment was begun An analogous condition is psoas abscess, aspiration is not here required to establish diagnosis, nor would such a case be classified as unconvincing, if contents were absorbed in course of treatment without aspiration. Aspiration and evacuation of hepatic abscess introduces a definitely deleterious factor, upsetting all natural processes of elimination. So long as amoebae are alive, flow of defence forces is centripetal, once amoebae are killed this become centrifugal, unless contents are forcibly evacuated, when flow remains centripetal, for nature abhors a vacuum He has demonstrated, and many cases in the literature confirm, that emetine alone suffices to cure liver abscess. Aspiration does not lead to cure in the quickest, most certain and most humane way possible Abscesses, especially in earlier stages, are often multiple, up to 25 per cent, it has been stated: no one could be sure that all abscesses had been evacuated by the aspirator: so that abscess which escaped the needle has recovered thanks to emetine, which even the most surgically minded use in association with the aspirating needle Why, then, put patient to pain and inconvenience of aspiration? Why not leave all the duty to nature and emetine?

Finally: (1) Emetine gr 1 for 12 consecutive days is not the best method of giving the drug in liver abscess cases or for dysentery; (2) the larger the abscess and the longer it has lasted the easier it is to cure with emetine alone.

Manson-Bahr replies, agreeing that emetine acts beneficially in liver abscess, and has sometimes appeared to have rendered operative interference unnecessary; but it is extremely difficult to distinguish actual formation of amoebic pus from amoebic hepatitis with liver tissue invaded by entamoebae sine pus formation. Aspiration is the only method capable of settling the matter. The question at stake is the size of the abscess or abscesses, and the results of the absorption of such a large amount of toxic matter on the individual. Usually grave toxaemia is present, and the sooner pus is evacuated the better for the patient It is untherapeutic to force an already toxic subject to absorb a large amount of dead liver tissue through his lymphatic channels, when a much more rapid and pleasant method is at hand Liver abscess may be a comparatively trivial, or a very serious, disease When a large quantity of pus is formed, respiration is hampered and heart may be displaced, emetine cannot be credited with such miraculous qualities that a few grains will suffice to dispel several pints of dead tissue and relieve pressure on vital organs, nor can it lessen amount of septic absorption He cites in support two cases, already reported, where, firstly, emetine failed to prevent recurrence of abscess, and secondly failed to prevent reaccumulation of pus in abscess already drained (*see* above) It is at present unwise to dogmatize on action of emetine in liver abscess but to assert that the larger the abscess and the longer it has lasted, the easier it is to cure with emetine, appears to be in direct contradiction to clinical experience

Thurston had operated on 167 cases of hepatic abscess and seen many others He agrees that it is possible for contents of hepatic abscesses, large and small to be absorbed, but that this rarely occurs Aspiration is necessary for the diagnosis of liver abscess Aspiration plus emetine does cure in the quickest the most certain and the most humane way possible as opposed to emetine alone It is astonishing what an amount of pus may be found with few physical signs His experience is against the statement that 25 per cent of the abscesses are multiple, and also that the larger the abscess the easier it is to cure with emetine alone He agrees that emetine gr 1 on 12 consecutive days is not the best way of administering the drug

H M H

CHAND (H). **A Note on the Treatment of Amoebic Abscess of the Liver.**—*Indian Med Gaz* 1926 Feb Vol 61 No 2 pp 66–67 With 1 chart in text

The author advocates treatment by aspiration and injections of emetine instead of open operation, and in support records a case where uninterrupted recovery followed aspiration of 4 pints of chocolate coloured pus from the liver, and daily emetine hydrochlor injections of 1 grain for 11 days

H M H

PETRIDIS (Pavlos Ar) Un cas d abcès du foie guéri par le traitement emétinien seul [**Liver Abscess cured by Emetine Alone.**]—*Bull et Mém Soc Méd Hôpit de Paris* 1926 June 3 Year 42 3rd Ser Vol 50 No 19 pp 891–894

Male patient 52 years old Twelve years previously dysentery with five subsequent repetitions For a month had suffered from intense pain in epigastrium and right hypochondrium with fever Liver found to be enlarged two finger breadths below costal margin, and tender—acute tenderness in epigastrium Leucocytes 8 500, neutrophil polynuclears, 76 per cent Emetine by injection was followed by rapid disappearance of fever and steady decrease in size of liver and of pain On the 29th day after admission to hospital liver normal in extent, no tenderness and patient quite well The author discusses this case—among obvious considerations he makes the completely critical observation " There is one lacuna, the lack of liver puncture, which if positive would have been of great value in estimating the efficacy of the emetine treatment." [The one lacuna makes, in this case, liver abscess not proven]

H. M. H.

i. PANAYOTATOU (A.). Sur un cas d'amibiase généralisée. [**A Case of Generalized Amoebiasis.**]—*Bull. Soc. Path. Exot.* 1926. Feb. 10. Vol. 19. No. 2. pp. 88–92. [12 refs]

ii. ——. Expérimentations biologiques sur le chat, concernant la pathogénie des *amibes des crachats* et des *amibes des urines* d'un meme malade, selon la méthode de Boeck et Drbohlav. [**Experiments on the Cat to show the Pathogenicity of Amoebae from the Sputa and Urine of a Patient.**]—*Ibid.* pp. 92–95. [4 refs.]

i. A wasted boy aet. 13 years, with dysentery which had lasted off and on for 3 months. Bronchitis signs in chest, large tender liver, spleen not palpable, frequency of micturition. By microscope, stools revealed encysted and active amoebae ; sputa, a few cysts and active amoebae containing r b.c.s , urine, no cysts, but many active amoebae, casts, pus, and red blood cells. Treatment by emetine injections and stovarsol by mouth was followed by rapid and apparently complete recovery. The author claims this to be a case of generalized amoebiasis, the infection beginning in the bowel and spreading throughout the body by blood or lymphatic stream.

ii. From this boy, sputa containing living amoebae were injected into the rectum of cat No. 1, whose anus was then sealed with collodion ; 48 hours later collodion was dissolved off, and two or three hours later the cat passed diarrhoeic stools, and on the 3rd day after the injection bloody stools. These stools showed abundant amoebae. The animal died on the 6th day. Autopsy revealed ulcers in the descending colon, and submucous haemorrhages in the whole extent of the large intestine, the walls of which were congested, oedematous, and patched with bloody mucus containing amoebae

From the same boy urine containing numerous amoebae was inoculated into rectum of cat No. 2, by the same technique. This cat developed mucous diarrhoea showing amoebae and scanty cysts On the 9th and 10th days the stools became bloody, and on the 11th day the extremely wasted animal died. Autopsy revealed the same condition of the large gut as in cat No. 1—numerous amoebae being found in the mucus.

From the same boy, and by the same method, muco-sanguineous faeces was injected into cat No. 3, producing muco-diarrhoea and later bloody stools, containing many amoebae. The cat wasted and died on the 8th day. Autopsy disclosed the same condition as in cats 1 and 2, once more numerous living amoebae being found in the gut.

These experiments are claimed by the author to show that the amoebae infesting the three different systems in the same patient were all of one species, *Entamoeba histolytica*; and that this parasite can infect different regions of the body and cause either intra or extra intestinal manifestations according to the organ of localization.

H. M. H.

FARMACHIDIS (C. B.). Amebiasi intestinale ed endocardite. [**Intestinal Amoebiasis and Endocarditis.**]—*Policlinico.* Sez. Prat. 1926. June 7. Vol. 33. No. 23. pp. 794–796.

Four cases are recorded, all in women between the ages of 38 and 57 years, who in the course of an attack of amoebic dysentery developed the physical signs of mitral insufficiency. There was no history in any of the patients of any of the usual forerunners of endocarditis. Whether the condition results from focal localization of the amoeba on the endocardium, or is a toxic effect, or, finally, whether the intestinal lesions permit the entrance of some pathogenic micro-organism, is not decided. [Blood-cultures do not seem to have been attempted.]

H. Harold Scott.

VAN HOOF (L.). Abcès, fistules et ulcères d'origine amibienne. [**Abscess, Fistula, and Ulcers of Amoebic Origin.**]—*Ann Soc. Belge de Méd. Trop.* 1926. Apr. Vol. 6. No 1. pp. 45–48. With 1 text fig. [2 refs.]

The patient, a negro woman, mother of three children showing no signs of syphilis, suffered from dysentery in 1915, for which she received injections—probably of emetine. There had been relapses of dysentery since. In July, 1925, the patient presented ulceration of the skin of the buttocks around the anus ; some of these ulcers communicated with the bowel. The uro-genital system was unaffected—inflammation and ulceration being confined to the cellular tissues of the ischiorectal fossae and the skin over them. In the pus of both fistulous ulcers, and those not communicating with rectum, active haematophagous amoebae were found. After a few injections of emetine hydrochlor. amoebae could not be found and rapid healing of the lesions followed.

H. M. H.

RAÚL GOYENA (Juan). Un caso de amebiasis intestinal y urinaria. [**Case of Intestinal and Urinary Amoebiasis.**]—*Semana Méd.* 1926. May 20. Vol. 33. No. 20 (1688). pp. 1075–1076. [1 ref.]

Though dysenteric amoebae have been reported as being seen in the urine, the cystic form has not. The author therefore places on record the case of a woman of 56 years who had suffered for two years or more with dysentery, 16–18 stools daily during the last five months. In the latter period also there has been lumbar and hypogastric pain, with frequent passage of turbid urine. Vegetative and cystic forms of *E. histolytica* were found in both stools and urine. Emetine was given subcutaneously and " Yatren 105 " by mouth. After 10 days' treatment there was considerable improvement, to 9 stools a day, and though cysts were still present the amoebic form was not seen. The lumbar pain diminished and the urine became clearer, but was found to contain still a few vegetative amoebae and a large number of cystic forms with pus cells.

H. Harold Scott.

PETRIDIS (Pavlos Ar) Un cas de syndrome pseudo-appendiculaire dysentérique. [**A Case of Dysentery simulating Appendicitis.**] —*Arch. des Malad de l'Appareil Digestif* 1925. Dec. Vol. 15. No. 10. pp 1027–1034.

Description of a case in the Greek Hospital Alexandria A male patient, 41 years old had suffered for two years from vague abdominal derangements, no dysentery For 45 days he had had abdominal pain and constipation followed by slight diarrhoea In hospital he was found to have fever, blood stained mucoid stools, and great tenderness in right iliac fossa over McBurney's point Two emetine injections were given At operation, to the naked eye and palpation the vermiform appendix and ascending colon appeared normal, the caecum was congested and appeared ulcerated and friable Appendix removed Patient died 24 hours later At autopsy all large intestine and caecum showed ulceration Microscopic examination revealed entamoebae in the submucous and subperitoneal coats of the caecum and large intestine

H M. H.

JOSÉ VITON (Juan) **Broncoamibiasis.**—*Semana Med* 1925 Dec 10 Vol 32 No 50 (1665) pp 1465–1467

Medical practitioners, states the author, are too prone to regard all patients with bloody sputum as tuberculous and he enumerates other causes for this symptom and particularly *E histolytica* A case is narrated of a medical student, 23 years of age, with a troublesome cough profuse expectoration, loss of appetite and wasting "There were amoebae in abundance in the expectoration" and the symptoms cleared up after treatment by emetine and salvarsan

H Harold Scott

PAISSEAU (M) & BERTRAND-FONTAINE Sur un cas d'amibiase bronchique [**A Case of Bronchial Amoebiasis.**]—*Bull Soc Path Exot* 1926 Mar 10 Vol 19 No 3 pp. 176–180. [8 refs]

The symptoms were wasting, cough and copious expectoration of purulent and bloody sputum Tubercle was suspected, but examination revealed no signs of this in the lungs, and X-rays showed them to be quite clear Liver spleen and kidneys normal Examination of fresh sputum disclosed numerous amoebae, with hyaline ectoplasm clearly marked off from endoplasm, and with inclusions, amoeboid movements No encysted forms The authors add that examination after fixation (Bouin) and iron-haematoxylin staining did not permit clear distinction between the amoebae and the leucocytes present [Nevertheless] emetine injections were promptly followed by disappearance of all symptoms

H. M. H

ST JOHN (J H) **Practical Value of Examination for** *Endameba histolytica* **by Culture.**—*Jl Amer Med Assoc* 1926 Apr 24. Vol 86 No 17 p 1272 [2 refs]

Following on BOECK and DRBOHLAV's successful cultivation of *E histolytica*, the author has found cultivation of the parasites a valuable aid in managing amoebic dysentery. Thus *E. histolytica*, which previous microscopic examinations had not revealed, were found by culture in the stools of patients and healthy men; one stool 48 hours old, containing by microscope cysts of *E. histolytica*, gave, on 24 hours' culture, motile forms Theoretically, multiplication of amoebas in culture and their settling to the bottom should give at one and the same time the equivalent of examination of a large sample of faeces by one of the concentration methods Practically, this is exactly what occurs The cultural method, therefore, is of value for diagnosis in questionable cases, and in treatment control After studying the parasite in culture the author concludes that the identification of *E histolytica* can be made accurately on noting its characteristic movements Large strains usually assume in motion a ' band " form, the long diameter being two or more times that of the transverse The rate of movement is 27·9 microns per minute ; slightly less than 1½ inches a day Any entozoic amoeba obtained from man in culture that moves actively across the field is most probably *E histolytica*

Culture methods give to the investigator an opening for more extensive research into the biology of the organisms than has been possible in the past , and to the epidemiologist an effective instrument for the detection of carriers of *E histolytica* This method applied to surveys of the population will probably necessitate a revision upward of the incidence of amoebas in man

H M H

CHIANG (S F) **Study of Parasitic Amoebae by Experimental Cross Infection of Laboratory Animals.**—*Nat Med Jl China* 1925. Dec Vol 11 No 6 pp 440–482 With 31 figs on 3 plates. [21 refs]

Cross infection of *E. histolytica* from man to rats was first claimed by LYNCH (1915), who fed rats with human faeces containing cysts of *E histolytica* His work lacked pathogenic tests as did BRUG'S work (1919) in Java in confirmation of LYNCH KESSEL in California (1923) in an extensive investigation confirmed LYNCH and BRUG'S work, but here again there was wanting fundamental biological tests for pathogenicity Dr Chiang has successfully infected laboratory-bred, *amoeba-free* young rats with *E histolytica* from two human sources, introducing the parasites by rectum and by mouth Biological tests were done by rat inoculation to kittens by rectum When the kittens were infected they were sacrificed for histological sections Dr. Chiang describes also a new species of amoeba in rats which he names *Endolimax muris* This amoeba was found in normal " cultural " rats and closely resembles *Endolimax nana* He failed to infect laboratory-bred amoeba-free young rats with *E nana* from man, but succeeded in infecting them with *Endolimax muris* from infected rats He found rats were normally infected with *Endamoeba histolytica* (*Murina*) , *Endamoeba muris* , and *Endolimax muris* To get amoeba-free young rats for experimental work one must raise them under special care with the combination of high enema examinations The author's methods to obtain this result, and the careful technique of his experiments and observations are fully described in this paper, which is well illustrated with photomicrographs He concludes that *E histolytica* (*Murina*) corresponds closely with *E histolytica* in man. *E muris*, of the type *E coli* in man, morphologically corresponds to the amoeba described by GRASSI (1881), WENYON (1907), and BRUG (1919) *Endolimax muris* (new species) corresponds to Endolimax in man. The results of this investigation give more weight to the evidence incriminating the rat as a carrier of *E. histolytica*, the causal agent of amoebic dysentery, and Dr. Chiang is to be congratulated on a well-planned, carefully executed experimental research, whose value can only be indicated in an abstract.

H. M. H.

KOFOID (Charles A.) & WAGENER (Edna Hannibal). **The Behavior of** *Endamoeba dysenteriae* **in Mixed Cultures with Bacteria.**—*Univ. California Public. Zool.* 1925. Nov. 24. Vol. 28. No. 5. pp. 127–154. With 15 figs. on 3 plates. [14 refs.]

The authors state that probably *Endamoeba dysenteriae* has been successfully cultivated by BOECK (1924) only. They have tried to cultivate *E. dysenteriae*, from acute and chronic human cases of amoebiasis, in order to determine if possible, its optimum medium requirements and the conditions which influence encystment, and to isolate it in pure culture. Full account is given of the technique and media used, and the details of their experimental observations.

They conclude :—

"1. *Endamoeba dysenteriae* has been grown by us in artificial media on repeated occasions from three acute cases of human amoebiasis. The stools of none of these three patients contained *Blastocystis*.

"2. Cultures made from the stools of nine different individuals with chronic amoebiasis and a heavy infection with *Blastocystis* failed to give positive results, apparently because of over-growth by this organism.

"3. For the growth *in vitro* of *E. dysenteriae* either egg or blood is a necessary medium requirement.

"4. *E. dysenteriae* ingests lipoidal substances present in coagulated egg as is shown when these are stained with Sudan III.

"5. *E. dysenteriae* grows better under partial anaerobic conditions than under aerobic conditions.

"6. The presence of blood stimulates more rapid multiplication of *E. dysenteriae* in culture media. Rabbit, guineapig, rat, and cat blood may be substituted for human blood.

"7. Bile does not cause encystment *in vitro*.

"8. No method was found for the isolation of *E. dysenteriae* in pure culture."

[Their work is well illustrated by plates showing the types of amoebae from human stool and in cultures.]

H. M. H.

KOFOID (Charles A.) & WAGENER (Edna Hannibal). **Studies on the Effects of Certain Drugs upon** *Endamoeba dysenteriae* **in Vitro.**—*Univ. California Public. Zool.* 1925. Nov. 24. Vol 28. No. 6. pp. 155–166. [4 refs.]

The authors state that the drugs used in these experiments are those recommended in the treatment of amoebiasis, and obviously the results obtained cannot be applied directly to conditions *in vivo* in man. They note that their results indicated that the amoebicidal effect of the drug used depended greatly upon the number of amoebas present in the culture. A second source of deviation would be increase of toxicity of certain arsphenamine compounds because of their rapid oxidation during the experiment. With due regard for these variables, their results show that the five arsenical compounds are highly amoebicidal. The yatren compounds had very slight effect on *E. dysenteriae in vitro.* The drug in each case was added in graded dilutions to cultures of *Endamoeba dysenteriae* in egg-Locke-blood medium. The lethal dilutions of these drugs in cultures, at the end of 24 hours, were :—

	Dilution		Dilution
Emetin hydrochloride	1–10,000	Neo-arsphenamine	1–142,000
Acetylarsan	1–10,000	Arsphenamine	1–100,000
Stovarsol	1–95,142	Sulph-arsphenamine	1–3,330
Yatren purissium	1–1,250	Mercurochrome	1–11,100
Yatren casein	1–250		

In cultures containing the lowest dilution of a drug in which *E. dysenteriae* persisted, the amoebas were highly vacuolated, and had failed to divide. Such amoebas were two or three times their normal size and were moribund.

H. M. H.

DOBELL (Clifford) & LAIDLAW (P. P.). **The Action of Ipecacuanha Alkaloids on** *Entamoeba histolytica* **and some other Entozoic Amoebae in Culture.**—*Parasitology.* 1926. June. Vol. 18. No. 2. pp. 206–223. [9 refs.]

It is accepted that emetine is a specific therapeutic agent in amoebic dysentery; but it is not clear how cure is effected. DALE and DOBELL (1917) found that *histolytica* infection usually curable in man was incurable by emetine in the cat, though the same strain of amoeba infected both.

Hitherto conclusions regarding the action of emetine on *E. histolytica* have been based on the results of an imperfect technique ; the length of survival of the parasites outside the body was, until recently, a few hours only and exposure of amoebae to the direct action of emetine was unavoidably short. When the results of such *in vitro* experiments were then compared with the effects of therapeutic action spread over many days it was not surprising that disagreement appeared. The authors were able to get rich cultures of amoebae growing with great regularity and thus to expose the amoebae to various concentrations of ipecac. alkaloids for as long as desired, while their control cultures, without alkaloid, would multiply throughout the course of the experiments. Great care was taken to have in each instance a pure culture of amoebae, though bacteria were always present. Throughout this study the solid constituent, of medium, was inspissated horse serum, and the liquid, egg-white or horse-serum diluted with Ringer's fluid. To a known volume of liquid were added dissolved and measured quantities of the alkaloid to be tested. After thorough mixing and warming to body temperature the tubes were inoculated with the amoebae and incubated at 37° C. for two to three days. As a rule, results at the end of 48 hours were decisive.

The experiments made it clear that 1/50,000 is the highest concentration of emetine that *E. histolytica* will tolerate for more than a short time. They might live and move actively for many hours in 1/1,000 concentration of emetine, but they did not multiply and the cultures soon died out. In 1/200,000 they grew well and multiplied as actively as in the control tubes. The threshold value of emetine was therefore

1/50,000 dilution. In more dilute solutions growth of *E. histolytica* was the rule, in greater concentration death always occurred. Cephaeline was found to be definitely more toxic than emetine for *E. histolytica*. These are the only two alkaloids of ipecac. which have been shown clinically to have curative effect on patients suffering from amoebic dysentery. The other ipecacuanha alkaloids and derivatives, though fairly close chemical relatives, are without action as therapeutic remedies and all in concentrations lower than 1/1,000 invariably gave cultures as rich as the controls.

Quinine, though clinically inactive, was found by DALE and DOBELL (1917) to be as lethal in high concentrations *in vitro* as emetine. Tested now by this new technique, quinine in concentration lower than 1/1,000 gave cultures of *histolytica* as rich as in the controls. Stovarsol was found to be without effect in dilutions of 1/20,000 or less; but had a slow poisonous action in stronger solutions. Thus in 1/1,000, *E. histolytica* were all killed in three days; in 1/5,000 a very few survived for four days; while in 1/10,000 there was slower and less evident action. Under these experimental conditions, emetine is shown to be ten times more toxic than stovarsol for *E. histolytica*. Similar comparisons showed that, *in vitro*, emetine and cephaeline were fifty times more toxic to *E. histolytica* than were any of the other ipecac. alkaloids. All these results held good for simian as well as for human strains. There thus appears to be a close parallel between the actions of the various ipecac. alkaloids on cultures of *E. histolytica in vitro* and their therapeutic effects in human infections therewith.

E. histolytica, however, stands alone in its susceptibility to emetine. In a mixed infection of *histolytica* and *E. coli*, emetine will eradicate the former and leave the latter unaffected. *In vitro E. coli* in 1/500 emetine solution gave growth in culture equal to the controls.

Endolimax nana grew in 1/25,000 emetine but not in higher concentrations. *Entamoeba gingivalis* was more sensitive to emetine than were *nana* and *coli* but considerably less so than was *histolytica*. When *Entamoeba histolytica* and *Endolimax nana* were grown side by side, the *histolytica* ultimately became dominant. A mixed culture of these two parasites was inoculated into a tube containing 1/25,000 emetine and subcultured at intervals of two days' time; *nana* alone developed. It was thus separated from *histolytica* by the specific lethal action of emetine on the latter, *in vitro*. There is here, again, a close parallel with what happens *in vivo*, for emetine will not eradicate a human infection with *Endolimax nana, Entamoeba coli* and *E. gingivalis*.

The authors consider that their experiments demonstrate that doses of emetine and other alkaloids requisite to kill *E. histolytica* immediately bear no apparent relation to the minimal doses of the same substances which are eventually lethal if maintained for a period of days. How weak solutions of emetine act on *E. histolytica* is difficult to determine. Experiments showed that it did not, even after a considerable time, impair permanently the reproductive powers of *E. histolytica* and that its action could not be due to any effect it might have on the bacteria growing with the amoebae.

DALE and DOBELL found that emetine 1/10,000 did not make *E. histolytica* non-infective. The poisoning process, whatever it be, is slow, producing its ultimate effect in a concentration far below that required to kill the parasites immediately. A very small amount of emetine if constantly present in the intestine for days or weeks would probably suffice to make life therein impossible for *E. histolytica* though not for *E. coli*.

The experiments of SELLARDS & LEVIA (1923) and DALE & DOBELL, together show that there is a real difference between cat and man in reaction to emetine. Dobell and Laidlaw think that man and cat deal with the alkaloid in different ways, that in the cat most of the emetine is rapidly excreted in the urine, while in man it is, at least in part, excreted into the intestines.

Some human beings infected with *E. histolytica* appear to be incurable by emetine however administered. To explain this the existence of emetine-resistant strains of the parasite has been postulated, but the authors found it impossible experimentally to obtain or produce a strain of *E. histolytica* resistant to emetine. They suggest that the incurability of these cases may be due to the fact that they, like the cat, excrete the drug rapidly in the urine, so that little or none of it reaches the colon. Comparative analyses of urine in different cases would settle the matter. They conclude finally that the curative effects of emetine in human amoebic dysentery are best explained as a result of the *direct lethal action* of the alkaloid on *E. histolytica*. The authors point out that, as with amoebae, so with trypanosomes and spirochaetes, it is not sufficient to expose parasites to a given drug for a few minutes or a few hours, or to ascertain what concentration of the drug is instantaneously fatal. Before the possibility of direct action can be excluded, the effects of prolonged exposure to weaker concentrations must be determined.

[The clinician will note, however, that these are conclusions based mainly on results of *in vitro* experiments, that a highly organic medium was in fact incubated with the drug tested; and most of all will he think of the "magic" (because very rapid) result of one or two gr. ½ injections of emetine in many of his severe cases of amoebic dysentery, and question if in so short a time and with so few doses a concentration of emetine greater than 1/50,000 has appeared in the colon. If this indeed be so, then its direct lethal action on the parasites in the colon must be a far more rapid one than in the experimenter's test tube.]

H. M. H.

KESSEL (John F.) & HUANG K. F. KANG. **The Effect of an Exclusive Milk Diet on Intestinal Amoebae.**—*Proc. Soc. Experim. Biol. & Med.* 1926. Feb. Vol. 23. No. 5. pp. 388–391. [6 refs.]

Kessel, working with culture rats, noted that amoeba-positive rats fed on exclusive milk diet for two weeks and then autopsied were found to be amoeba negative. RETTGER, CHEPLIN, CANNON, MCNEASE have shown that a milk diet changes the flora of rats from predominant *B. coli* type to predominant *B. acidophilus* type. HEGNER found an exclusive milk diet to be disadvantageous for the growth of Giardia, Trichomonas and Hexamitus in rats.

In the work on monkeys and children here recorded, the authors used Kessel's technique (iodine-eosin and iron haematoxylin) for examining the stools. Gram stains also were made before and during the milk feeding and after conclusion of the experiment. Stools of the monkeys and children were examined on six or more days before starting milk diet and daily during and two weeks after the last day of milk-feeding, and again two and three months after the last day of milk—six or more daily examinations at each follow-up period. Two monkeys and two children with amoebae in stools were kept in each experiment as controls, and in each instance amoebae appeared in their stools throughout the period of the experiment. Tabulation of results brings out the following points :—

i. *Boiled milk fed to monkeys for two weeks.*—Reduction, and in some cases, disappearance of amoebae during boiled milk feeding period, but amoebae were found again two weeks after cessation of milk diet.

ii. *Unboiled milk fed to five monkeys for two weeks.*—3 became permanently negative for *E. dysenteriae*, all 5 for *E. coli*, 2 for *Endolimax*, 4 for Iodamoeba, and 2 for Chilomastix.

iii. *Unboiled milk fed to children for ten days.*—3 children heavily positive for amoebae, but showing no important clinical symptoms were placed on exclusive milk diet for 10 consecutive days. One child was completely rid of the amoebic infection, after the period of milk diet and up to 3 months later. Another was rid of *E. dysenteriae* only, and another of *Endolimax nana* only.

As with the monkeys, flagellates in the children's stools did not respond so readily to the milk diet as did the amoebae

The authors conclude that this diet cannot be recommended as a therapeutic measure, since the results are so uncertain ; the diet is inadequate and, to some, offensive ; and the dangers of infection in feeding raw milk considerable.

H. M. H

GUÉRIN (F H.) & PONS (R) Culture de *Blastocystis hominis* et des protozoaires parasites intestinaux de l'homme [**Culture of** *Blastocystis hominis* **and Intestinal Protozoa of Man.**]—*Arch Insts Pasteur d'Indochine* 1925 Oct No 2 pp 213–221. With 2 figs. on 1 plate [31 refs]

The author's modification of culture of *Entamoeba histolytica* is here fully described The culture medium consists of Dorset medium in which the distilled water is replaced by a 2 per cent solution of egg-albumin. After coagulation in a suitable tube at an angle of 45 , this is covered as far as the middle with a solution consisting of 10 gm sodium chloride 0 9 gm potassium, 0 2 gm calcium, 0 1 gm sodium bicarbonate, and 1 gm. glucose per 1,000 gm of distilled water The upper slope of the Dorset medium is inseminated with the sanguinolent mucus, and the whole then flooded with albuminized Ringer solution and incubated at 37° C. In this manner the authors have also cultivated *Blastocystis hominis*, *Enteromonas hominis*, and *Trichomonas intestinalis*, but not Giardia

A. A.

KOFOID (Charles A) & WAGENER (Edna Hannibal) **A Simplified Medium for the Cultivation of** *Endameba dysenteriae* —*Jl Lab. & Clin. Med.* 1926. Apr. Vol 11. No 7. p. 683 [1 ref]

The authors, referring to the methods of BOECK and DRBOHLAV for cultivating the dysentery amoeba, find, as a medium less favourable to bacteria, one made by covering the egg-slant with 10 cc of Locke's solution containing 0 5 per cent of defibrinated rabbit-blood (or rat, cat, or guineapig blood) " It is necessary to transplant the cultures every 48 hours in order to keep them going continuously "

A. A.

i. REICHENOW (Eduard). Neuere Forschungen ueber die Darmamöben des Menschen. Kritisches Sammelreferat. **[Recent Work on the Intestinal Amoebae of Man.]**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. May 1. Vol. 30. No. 5. pp. 207–221. [55 refs.]

ii. HODSON (V. S). **Emetine in the Treatment of Hepatic Abscess.** [Correspondence.]—*Lancet.* 1926. May 29. pp 1063–1064.

iii. THOMSON (J. G) & LUCAS (Catherine L T). **A Preliminary Note on the Study of** *Endamoeba blattae* **(Butschli, 1878) Leidy, 1879, found parasitic in the Intestine of** *Blatta orientalis* **in England, with some Remarks on its Generic Status.**—*Jl. Trop. Med. & Hyg.* 1926. Feb. 1. Vol. 29. No. 3. pp. 41–43. With 5 figs. on 1 plate. [26 refs]

iv. BARRET (Harvey P.) & SMITH (Nannie M.). **The Cultivation of** *Endamoeba ranarum.*—*Ann. Trop. Med. & Parasit.* 1926. Feb. 11. Vol. 20. No. 1. pp. 85–88. [16 refs]

v. TALIAFERRO (W. H) & FISHER (Anna B.). **The Morphology of Motile and Encysted** *Endomaeba ranarum* **in Culture.**—*Ibid.* pp. 89–96. With 14 figs. on 1 plate. [16 refs]

vi. IKEDA (T). **On a Streptothrix found in a Liver Abscess.**—*Taiwan Igakkai Zasshi (Jl Med. Assoc. Formosa).* 1926. Mar. No. 252. English summary p 4. [In Japanese]

i. A critical review of fifty-five papers on intestinal amoebae published 1922 to 1926. These have already received notice in this *Bulletin.*

ii. To rely on aspiration and emetine—in that order—is to over-estimate the effect of aspiration and under-value that of emetine.

H. M H.

iii. This is a good descriptive and well-illustrated paper, and will be useful to those who hold the view that the study of medical protozoology should begin upon the "parasites" (to use that term in its most general sense) of common, cosmopolitan, familiar animals

iv. Notes the successful cultivation of *Entamoeba ranarum* in a medium of 1 part human serum and 9 parts 0 5 per cent salt solution, with pH 7 to 8 as the most favourable reaction.

v. In agreement with all recent investigation this, too, emphasizes the similarity in structure of *E. ranarum* and *E histolytica*

A. A.

vi. The English summary of this paper, from Formosa, is as follows:—

"After operation of a patient suffering from liver abscess, the author examined the pus taken from the abscess by anaerobic culture and found a Streptothrix. The abscess must have been caused by this germ, because no other purulent bacilli except this could be found in the suppurative focus in the liver and also because the patient recovered about one month after operation. Author describes here the nature of this germ"

A. G. B.

BACILLARY DYSENTERY.

MUKHERJI (Santosh Kumar). **Bacillary Dysentery.**—*Indian Med. Rec.* 1926. May. Vol. 46. No. 5. pp. 135–144. With 2 text figs.

An essay presenting concisely and clearly the known facts of bacillary dysentery, its treatment and prevention. The author notes that the ancient Hindu physicians differentiated dysentery from diarrhoea. Bacillary is the commonest type in India. ACTON and KNOWLES give 90 per cent. of dysentery in Calcutta as bacillary—the author's own experience in Calcutta gives 70 per cent. An excellent, well illustrated synopsis is given of the microscopic characters of the bacillary dysentery stool—an all important matter in diagnosis. The cellular exudate shows preponderance of polymorphonuclear leucocytes and presence of ghost cells, and large endothelial macrophage cells containing red blood cells. The data for diagnosis of bacillary and amoebic dysentery are given side by side in tabular form. He notes that most failures of serum treatment are due to insufficient dosage or delayed administration. Antidysenteric serum is less toxic than antidiphtheritic or antitetanic serum. Prophylaxis—isolation of patient, anti-fly measures, care of milk and water supply, treatment of carriers, vaccination.

H. M. H.

WISKOWSKI (S. W.). Zur Frage ueber Mechanismus des Kollapses bei der bazilleren Dysenterie. [**Mechanism of Collapse in Bacillary Dysentery.**]—*Jl. Med. de l'Asie Centrale* Tashkent. 1926. Vol. 5. No. 3. German summary pp. 193–194. [In Russian. Nos. 2 & 3. pp. 80–86; 141–146. With 4 charts in text. 30 refs.]

In consequence of its complexity, bacillary dysentery toxin has differing actions on the human organism and on lower animals respectively. There are two (according to HORIMI, four) different poisons. The exotoxin affects especially the splanchnic nerves. Observations on 100 cases in human beings showed death in 36 with characteristic symptoms of collapse. The patient suddenly becomes worse; the temperature subnormal, extremities cold; skin and lips pale as from great loss of blood, pulse is slow, of low pressure, regular, cardiac boundaries not enlarged; heart sounds audible; there is characteristic shortening of the interval between first and second sounds, the first louder than the second. At onset of collapse the blood pressure falls to 5–10 mm Hg.—and may be unmeasurable. In adults collapse lasts longer, and may be repeated. In aged patients the blood pressure falls very suddenly and collapse lasts much longer. *Autopsy* The cadaver is very pale The blood vessels in abdomen are much engorged. The heart is contracted, left ventricle usually empty. Heart muscle is only slightly degenerated, and there is no oedema of lungs. The colon and small intestine show very little change

The author considers death to be caused by the dysentery toxin paralysing the splanchnic nerves, and producing blood stasis in the abdominal vessels. In the acute stage of the illness the heart and peripheral blood vessels are little affected. The condition of the patient is worsened by the derangement of heat regulation and production.

H. M H.

PACHECO (Genesio). [In Portuguese and English.] A dysenteria bacillar na cidade da Bahia. **Bacillary Dysentery in the City of Bahia.**—*Mem. Inst. Oswaldo Cruz.* 1925. Vol. 18. No. 1. In Portuguese pp. 5–41. With 10 charts in text. In English pp. 43–79. With 10 charts in text.

The author remarks that, endemic or epidemic all over the world, dysentery does not spare Brazil. Its existence had already been made sure in Rio de Janeiro, Sao Paulo, Bello Horizonte and in the Hinterland of Minas Geraes. His work on the epidemic in Bahia, 1923–24, first bacteriologically proved the existence of bacillary dysentery in that city, although the disease there must date from far back, for the sanitary records of the city give 60 deaths from dysentery in 1897, and since then there have been considerable epidemics, like that of 1908, with 479 deaths. Most of these must have been due to bacillary dysentery, for amoebic is rare. In the 1924 epidemic his investigation revealed not a single case of amoebic dysentery. The mortality, moreover, was high. The bacilli isolated were Shiga and Y types; the former providing the severer cases and higher mortality. It was also the prevailing organism amongst the indigent uncleanly patients; the Y-type prevailing amongst the better class of patient. The epidemic was not water-borne; though water probably played a small part its spread was mainly due to direct contamination of food and drink by careless or dirty, infected, poverty-stricken people. The paper contains careful reports on the epidemiology and bacteriology of the epidemic with tables and graphs.

H. M. H.

HOSHI (N.). Ueber Saeuglings-Dysenterie im Orient. [**Infantile Dysentery in the East.**]—*Oriental Jl. Diseases of Infants.* Kyoto. 1926. Jan. Vol. 1. No. 1. German summary pp. 41–42. [In Japanese.]

During the last four years the author investigated bacteriologically 164 cases of dysentery in children at Dairen Hospital. Fifty-four were infants under 1 year, in 33 per cent. of whom the dysentery bacillus was isolated.

Among all cases he found Y-type to be commonest—35 per cent.; Flexner-type, 25 per cent.; Hiss-type, 12 per cent.; Strong-type, 9 per cent.; and Shiga-type, 6 per cent. Serum-agglutination was found less often in infants than in older children. Complement-fixation reaction was positive in 86 per cent. Toxicity for infants ran parallel with toxicity for mice; it was strongest with Shiga-type, next came Flexner and least toxic was Strong-type. Infantile dysentery was most frequent in summer 74 per cent. of cases; then, in order of frequency of cases autumn, spring, winter. Older children were more often infected than younger ones; Shiga-type was not found in children under 1 year of age. All children suffering from dysentery were artificially fed; 60 per cent. were boys and 40 per cent. girls. Fever was frequently noted. Toxaemia occurred in 65 per cent. of cases: it was most marked in Flexner- and Shiga-types. Flexner-type produced the more severe local reactions—85 per cent. tenesmus, 64 per cent. acetonuria. Most cases were cured in 3 to 4 weeks, mild cases in 2 to 3, and severe cases in 5 to 6 weeks.

H. M. H.

HOSHI (Naotoshi). **On the Fever and Bacillus Type of Dysentery and Ekiri in Children in Manchuria.**—*Jl. Oriental Med.* 1926. Mar. Vol. 4. No. 3. English summary pp. 64–65. [In Japanese.]

In Manchuria dysentery occurs frequently during the summer months. At Dairen Hospital Children's Clinic in the last 4 years there have been 525 cases of dysentery, "ekiri," and enteritis, inclusive. 266 cases were proved to be bacillary dysentery. Among these children with dysentery five types of fever were noted.

1. A-type. Temperature rose suddenly, then gradually fell in about 3 days with restoration to health. 27·7 per cent.
2. B-type. Temperature rose suddenly falling in about 3 days, but fever was repeated for 5 or 6 days, and then became normal. 32·3 per cent.
3. C-type. Continued temperature. 30·3 per cent.
4. D-type. Irregular temperature 6·5 per cent.
5. E-type. No fever. 3·2 per cent.

Using Shiga's classification of the bacillus, by agglutination tests, into types I, II, III, IV, and V—in the A fever type of case none were infected with Shiga's bacillus type I Shiga II and III were found in 36 per cent. A fever type, 34 per cent B, and 30 per cent. C types Shiga IV and V were found in 46 per cent B, 33 per cent A, 21 per cent C Y-bacillus (classified by sugar fermentation) was found in 52 per cent. B, 38 per cent A, and 8·7 per cent C Flexner bacillus was found in 38 per cent B, 33·3 per cent. C, 27·4 per cent. A. Clinically cases of A-type fever were not of a serious nature. B-type cases were moderately severe, and C-type more severe, and D-type usually fatal The first acme of temperature in B-type is thought to be a sign of intoxication, and the second acme to be due to some intestinal cause.

H. M. H.

YOSHITOMI (K.). Kinder Dysenterie verursacht durch Mischinfektion von Y-Typus Dysenterie Bacillus und *Mikrokokkus tetragenus aureus* [**Child Dysentery caused by Mixed Infection with Y-Bacillus and** *M. tetragenus aureus*]—*Oriental Jl. Diseases of Infants* Kyoto. 1926 Jan Vol 1 No. 1. German summary pp. 39–40. With 2 figs. [In Japanese.]

In the Orient dysentery in children is seldom caused by Shiga bacillus At the clinic for children, Darien Hospital, in the last 4 years, 132 cases of dysentery were caused by Flexner and Y-type bacilli, and 32 only by Shiga-type.

The author investigated a case in a boy aged 3 years and 2 months. The patient had high fever, moderate toxic and severe dysenteric symptoms From the 10th to the 16th day of illness the author isolated a *Micrococcus tetragenus aureus* in pure culture Intraperitoneal injection of this organism into mice and guineapigs produced septicaemia and death Subcutaneous injection of the coccus caused local inflammation and set up a diarrhoea These cocci were infective for human beings producing inflammation of the gut with characteristic yellowish purulent stools and remittent fever. The cocci are always in fours enclosed in a thick capsule They are Gram positive In nutrient media they produce a fine yellow pigment and the capsule dwindles They gradually liquefy gelatine They do not coagulate milk nor split carbohydrates in culture. If artificial culture cause change in character, reversion to type follows on passage through animals or culture in serum or blood bouillon. From this case a Y-type dysentery bacillus of medium toxicity was also isolated. Two plates in colour illustrate respectively the ochre yellow growth of the micrococcus on media and the yellow purulent stool.

H. M. H.

Brokman (H) & Przesmycki (F) **Experiments on the Sensitivity of the Human Skin to the Toxin of the Bacillus of Shiga-Kruse.**—*Jl of Immunology* 1926 May Vol 11 No 5 pp 361–370 [1 ref]

The discovery by Schick of the cutaneous test for susceptibility or immunity to diphtheria naturally suggested the possibility of using a similar procedure in other bacterial diseases Brokman (1922) described a cutaneous reaction obtained with culture products of dysentery bacillus and called attention to the skin as a general indicator of immunity [see this *Bulletin*, Vol 21, pp 37, 352, 690] The work of the Dicks (1924) on skin tests in scarlet fever revived interest in the subject It was known that Shiga bacillus produced a true toxin and that there were individual differences with respect to injection of toxin in animals and infection in human beings The technique and nature of the skin reaction with dysentery toxin have been already described in Polish journals and in a communication to the League of Nations The authors now describe further experiments on this subject These indicate that the cutaneous reactions obtained with the test fluid from Shiga Kruse bacillus depend upon a true toxin in it and the absence of reaction proves the lack of susceptibility of the skin to that toxin and, further that *if sufficient antitoxin is artificially introduced into the individual, a previous positive reaction becomes negative*—a result identical with that in individuals naturally insensitive The antitoxin content of the blood therefore, causes the negative reaction This antitoxin is specific, and as in the case of natural immunity to diphtheria it appears spontaneously in the individual without a previous attack of the disease or artificial immunization If this presence of dysenteric antitoxin in human beings provides an actual immunity against infection with dysentery, then the way must be open to attempt an active immunity in the same way as is done for diphtheria and scarlet fever The authors have begun this attempt with dysentery anatoxin with results to be communicated later

H M H

de Bellard (E P) La disenteria bacilar Breve nota sobre su tratamiento [**Treatment of Bacillary Dysentery by Castor Oil.**]—*Gac Med de Caracas* 1925 July 15 Vol 32 No 13 pp 196–197

The author presents a brief note on the treatment of three cases of bacillary dysentery by castor oil The initial dose is 60 cc, or a little less if the patient is very weak and in a critical state During the second and third days he gives 4 cc every hour, none being given during the night If this course has not cured the doses are repeated during the fourth to the sixth days Symptoms completely disappeared in 10 to 12 days [See Boase, A J, *ante*, p 379]

H Harold Scott

Manson Bahr (Philip) & Gregg (A L) **The Surgical Treatment of Chronic Bacillary Dysentery.**—*Brit Jl Surgery* 1926 Apr Vol 13 No 52 pp 701–714 With 9 text figs

Chronic bacillary dysentery is distressing, intractable and too often, in England, unrecognized, and so receives no serious attention

CROMBIE first described it—*Morbus bengalensis*—in India. It is a sequel to chronic ulceration of mucous membrane of the large intestine by Flexner Y-group bacilli; rarely by Shiga bacillus. Symptoms and complications, medical and surgical treatment of the condition, are clearly and concisely described. Pictorial representation is given of the essential morbid histology of the gut lesions in its early and later stages.

(1) Ulcerative necrosis of the mucous membrane only, the muscularis mucosae remaining intact. These ulcers are usually found on the free edges of the transverse folds of mucous membrane at the flexures of the large bowel and, in contrast to amoebic ulcers, their outlines are serpiginous, the edges are undermined, and they often intercommunicate with near-by lesions.

(2) Mucous retention cysts in the submucosa, in which virulent dysentery bacilli may be found. These cases usually become " convalescent carriers, *and assist in the spread of the infection.*"

(3) Later extension of the ulceration over the whole mucous surface, infection by faecal organisms and formation of exuberant, even polypoid excrescences of granulation tissue with fibrosis of the bowel wall. This process usually affects the pelvic and sigmoid colon. Inflammation may extend to the peritoneal coat.

(4) Tuberculosis of muscular coat of large intestine secondary to bacillary dysentery. They summarize their conclusions :—

" 1 Bacillary dysentery of a mild type may result in a progressive and chronic ulceration of the large bowel in which the specific dysentery bacillus plays but the initial rôle.

"2 The resulting condition is usually not amenable to medical treatment, and life may be preserved only by surgical intervention

" 3. Indications for operation lie in the persistance of toxaemia and loss of weight in spite of colonic lavage

" 4 Appendicostomy may be performed as a measure of relief, but caecostomy may be required

" 5 Caecostomy with the use of the tampon-tube supplants ileostomy except in cases in which the small bowel is involved

" 6 The question of closure is a matter for careful consideration in each case , temporary closure with dressings assists the operator in making his decision.

" 7 Stenosis of the bowel to any serious extent is rare, and when it does occur is likely to be localized, so that excision may be practicable.

" 8. Tuberculous infection may be superimposed upon a chronic ulcerated dysenteric bowel."

The authors regard as a serious danger the engrafting of tuberculous infection on to a chronic bacillary dysenteric condition of the large intestine. In three cases they had been able to demonstrate the tubercle bacilli in sigmoidoscopic scrapings of the bowel wall.

[This paper is truly adorned, and its value enhanced, by drawings and coloured plates from the pen and brush of Dr. MANSON-BAHR. They are well chosen and illustrate convincingly the pathology of the lesions described. They deserve mention for themselves alone, and as a lesson for these times, when the custom grows of cluttering up morbid anatomy descriptions with micro-photographic " illustrations " that very seldom illustrate, and never adorn.]

H. M. H.

MORISHIMA (Kan-Ichiro) **Experimental Inquiry into the Constancy of Types of** *Bacillus dysenteriae*—*Philippine Jl Sci* 1926. Apr Vol 29 No 4 pp 447–463 With 1 plate [4 refs]

The Shiga-Kruse dysentery group is fairly uniform and constant The second main group of mannite fermenters is a variable one, and has several subgroups These mannite fermenters, when plated on dextrin agar plates, showed development of two types of colony, one regular and transparent, the other irregular and opaque The opaque colonies of an original Y-strain give acid production in 1 per cent maltose and in dextrin broths, whereas the regular and transparent colonies produced acid only occasionally after 3 weeks or longer incubation It was found that the transparent colonies of the original type organisms gave rise to the two types, transparent and opaque, but the reverse was not the case For serological tests monovalent sera were obtained from rabbits immunized against strains of opaque colony and transparent colony respectively These sera had about the same power to agglutinate either the opaque type or the transparent type of colony, that is to say, these colonies could not be differentiated by agglutination test In adsorption trials, however, all transparent colonies adsorbed agglutinins present in the corresponding immune serum both for the transparent and for the opaque colonies On the other hand, none of the opaque colonies adsorbed agglutinins for the transparent colonies

According to the author, the experiments, as far as they go, point to the conclusions that —

(1) The Shiga-Kruse group is stable

(2) There is considerable variability in the mannite fermenting group, but all its subgroups should be considered as more or less interchangeable variants W I Harvey

VINCENT (H) Sur les cultures croisées des bacilles dysentériques. [**Crossed Cultures of Dysentery Bacilli.**]—*C R Soc Biol* 1926. Feb 26 Vol 94 No 7 pp 435–437 [2 refs]

The author investigates the effect which previous growth of one race of dysentery bacilli in a medium has upon the subsequent growth of another race in it Bouillon cultures of 4 days and of 11 days, of each of the types Shiga, Flexner, Hiss Strong & Saigon were centrifuged at high speed The supernatant fluid in each case was sown with each of the other types and incubated for growth The bouillon in which the Shiga type had grown sufficed for the cultivation of all the other dysentery bacilli The Flexner type inhibited the growth of some strains of Shiga, while Hiss and Strong bacilli were the most antagonistic to subsequent growth of other races W F H

MERTENS (W K) & RADEMAKER (G A) Iets over bacillaire dysenterie en de agglutinatie daarbij [**Notes on Agglutination in Bacillary Dysentery.**]—*Nederl Tijdschr v Geneesk* 1926 Mar. 20 70th Year 1st Half No 12 pp 1190–1195 [8 refs]

The authors discuss the value of the agglutination test in dysentery and lay stress upon the need for caution in accepting its findings, for the reasons that.—

(1) Agglutination may be absent in chronic dysentery. (2) Normal human sera and normal rabbit sera may give high agglutination titres

with the atoxic dysentery bacilli (3) Inoculations against typhoid fever and cholera will raise the titre of the individual's serum to dysentery bacilli

The authors agree with other observers that agglutination by the patient's serum up to 1 in 800 should be discounted in establishing a diagnosis and they recommend the use of immune sera of the highest possible titre for the identification of dysentery organisms from the stools

At the same time, a serological test is valuable in dysentery if care be exercised a number of strains be used, and controls be sufficient

Details, both clinical and bacteriological, are given of two cases

W F H

KONDO (Seigo) Weitere Untersuchungen ueber die Auswertung der antitoxischen Dysenteriesera am Kaninchen [**Use of Rabbits for Standardization of Dysentery Sera.**]—*Med Klin* 1926 May 14 Vol 22 No 20 (1118) pp 775–776 [7 refs]

Ordinarily mice are used for testing antidysentery sera The author employs the usual method of evaluation with an L+ dose of toxin As toxins, he had available German test toxin, dried "wash water" toxin, and "whole" toxin, and as standard sera the dried German serum, the fluid English serum C950, the dried Polish serum, and the dried Japanese serum 128 The test dose of toxin per kilogm of living weight used in his rabbit experiments was 4 times that found for white mice The sera were used in a series of appropriate graduated doses and the mixture of serum and toxin was left for 30 min at room temperature before intravenous injection

The results obtained in rabbits, in spite of undoubtedly greater liability to variation, corresponded closely to those obtainable with mice Other workers had found with mice that the relative antitoxin content of English, German, Polish and Japanese sera was as 1 3 12 5 45, while the author finds this with his rabbits to be 1 3 15 45

His conclusion is that rabbits can be used for the measurement of the potency of dysentery serums, but that, considering the liability to occurrence of a great range of susceptibility in these animals and their greater cost, mice are to be preferred for this purpose

W F H

FUKUHARA (Yoshimoto) Zur Wertbemessung des antitoxischen Dysenterieheilserums [**Evaluation of the Antitoxic Curative Serum of Dysentery.**]—*Ztschr f Immunitatsf u Experim Therap.* 1926 Feb 20 Vol 46 No 3 pp 234–237

The unit of measurement adopted by the author is that quantity of antitoxic serum capable of completely neutralizing 100 minimal lethal doses of a given toxin The L+ dose of a testing toxin is measured by this unit and the value of a serum, whose potency is to be determined, by the L+ dose Polyvalent sera submitted for testing gave values of 3 to 10 immunity units, while a monovalent Shiga serum gave 20 units or over These tests were carried out on rabbits The method of SACHS and GEORGI, depending on intravenous injection of white mice, was tested on Japanese white mice and found useful

W. F. H

DUMAS (J), RAMON & BILAL (Said) Anatoxine dysentérique. [**Dysenteric Anatoxin.**]—*Ann Inst Pasteur* 1926 Feb Vol. 40 No 2 pp 134–140 [4 refs]

A 15-day Shiga culture is filtered through paper prepared with infusorial earth, and then through a Chamberland F candle An injection of 1 cc of 1 in 25 or 1 in 40 dilution of the toxic filtrate intravenously in a rabbit of 2 to 2 4 kilos produced death in 3 to 5 days with the symptoms of experimental dysentery To convert this toxin into anatoxin 6 cc 40 per cent formaldehyde, which is the optimal dose, is added per litre, and the whole kept at 37° C After 15 days at this temperature it now required 5 cc intravenously to produce dysenteric symptoms , after 30 days as much as 10 cc could be tolerated For prophylactic testing 0 5 and 1 cc anatoxin are injected subcutaneously at an interval of 8 days in the rabbit There is no local lesion and only slight temporary loss of weight The test of immunization is given by the intravenous injection, two weeks after the last prophylactic dose, of 4, 6 and even 8 lethal doses of toxin or by the subcutaneous injection of 3 to 4 lethal doses of a 24-hour bouillon culture This easy immunization of the rabbit is contrasted with the difficulty of immunization experienced with toxin, even though it has been attenuated by heat The serum of rabbits treated with anatoxin does not agglutinate dysentery bacilli Anatoxin kept in a sealed tube and protected from light retains its antigenic potency for at least twelve months

In practice anatoxin has been used to immunize horses for the production of antitoxin After subcutaneous injection of 10 25, 50 and 100 cc they can tolerate without inconvenience 250 and even 500 cc The serum obtained can in dilutions of 1 in 200 to 1 in 400 neutralize 6 lethal doses of toxin as tested on mice Some tests have also been carried out in human beings Doses of 0 5 and 1 cc anatoxin were used with but slight local inflammatory reaction and no rise of temperature The efficacy of anatoxin as a prophylactic has still to be worked out on a sufficiently large scale

W F H

ALIVISATOS (G P) & JOVANOVIC (M) Experimenteller Beitrag zur peroralen Immunisierung des Kaninchens gegen Ruhr [**Oral Immunization of Rabbits against Dysentery.**]—*Cent f Bakt* I Abt Orig 1926 May 5 Vol 98 No 5/6 pp 311–325 [7 refs]

To be efficient for prophylactic administration on a large scale a vaccine must be capable of preparation on a large scale be easily administered, and have only a slight reaction Oral administration is much easier than inoculation

The points to be determined in the rabbit with a view to the extension of the procedure to man are (1) What is the smallest dose of killed dysentery organisms which, given *per os*, can protect rabbits against intravenous infection , (2) whether the animal immunized against living virus is also immune to the toxin (3) how long the immunity lasts (4) whether the immunity *per os* is usually more quickly attained than that by inoculation

The experiments showed that, whereas oral doses of 70 mgm gave a safe protection to even 4 minimum lethal doses, doses of 80–90 mgm themselves produced in many cases undesirable effects and sometimes death. This protection, given by oral administration, against the virus extended also to the toxin, but in the latter case wore off, so that the toxin, at first neutralized, ultimately became free and killed the animal Thus immunized animals, which had been tested with as little as one minimum lethal dose of toxin, died 24 to 38 days later. The immunity resulting from oral administration is therefore not an antitoxic immunity The duration of immunity to virus was not of indefinite extent it lasted up to 30 days but not to 45 As regards the rate of development of immunity, this is dependent on the interval between conclusion of the immunization and the infection For a testing infection immediately after immunization, protection is afforded only to one minimum lethal dose, and sometimes it would appear that the toxic action of the testing dose had added itself to that of a hitherto undeclared toxic effect of the immunizing dose An interval after immunization of only 4 days, however, already gave a high degree of protection —to one, 2, 4 times the minimum lethal dose

If now we examine the dictum that " a disease is best prevented by the immunization of its recipient cells," we find that this may be but partially true There are many cases in which, where it is feasible, protection can be obtained by strictly local application of the protective antigen, but there are other cases in which, *also*, or sometimes *only*, a subcutaneous inoculation (general immunization) is successful this is the case where there are types of cell, more or less susceptible to virus or toxin, which cannot be reached or cannot be wholly immunized by local application of protective antigen Both methods then are useful

And what now of the extension of the procedure of oral dysentery immunization to man ? As man is more susceptible than the rabbit to dysentery toxin, therefore it should be possible to effect local immunization with smaller quantities of protective vaccine A relative immunization is all that would be required in man, as he would not be the subject of such massive infection as were the rabbits used in experiment This would remove all fear that the protecting dose came too near to the harmful dose for any practical use Then also the natural mode of infection of man excludes the possibility of pure toxin action, and this gives support to the possibility of oral administration as a means of protection in man for at least a dysentery season this is backed by the rapidity with which immunity is developed A note appended to this article states that these *suppositions* have meanwhile received complete confirmation in practice, and that oral immunization has been statistically shown to immunize human beings easily, quickly, and for a dysentery season

W F H

FUJITA (Koshiro) Zur Frage des Vorkommens des heterogenetischen Antigens bei Bakterien der Coli-Gruppe, nebst Versuchen ueber die Giftigkeit der Shiga-Antisera fur Meerschweinchen **[The Occurrence of Heterogenetic Antigen in Bacteria of the Coli Group. The Non-Toxicity of Shiga Antisera for Guineapigs.]**—*Ztschr f Immunitatsf u Experim Therap* 1925 July 10 Vol 43 No 4/5 pp 329–338 [6 refs]

Immunization of rabbits with Coli, paratyphoid B, Breslau and Gartner bacilli did not produce heterogenetic sheep's blood haemolysin. Simultaneous immunization with a paratyphoid B and Gartner bacillus mixture also had a negative result On the other hand, with some of the animals immunization with Shiga bacillus was followed promptly by the formation of heterogenetic haemolysin for sheep's blood Shiga bacillus therefore, through its capacity to form heterogenetic haemolysin, occupies a unique position Intravenous injection of 2 cc of Shiga antiserum proved non-poisonous for guineapigs

H M H

SCHMIDT (Hans) Ueber die Fahigkeit der Shiga-Ruhrbazillen beim Kaninchen heterogenetische Hammelbluthamolysine zu bilden [**The Faculty of Shiga Bacilli of forming Heterogenetic Sheep's Blood Haemolysin in Rabbits.**]—*Ztschr f Immunitatsf u Experim Therap* 1925 July 10 Vol 43 No 4/5 pp 422–432 With 3 figs on 1 plate [2 refs]

The author s investigation confirms in essentials the observations of JIJIMA and FUJITA but not their conclusions in entirety It is true that many Shiga strains produce a haemolysin for sheep s blood in the rabbit but this production is only in small measure and the haemolysin is inconstant He had shown in earlier investigations that in certain conditions Shiga bacilli could produce non-specific enhancement of normal haemolysin in rabbits and that this naturally labile normal haemolysin is heterogenetic in kind and very lightly adsorbed with others than Shiga bacilli

H M H

PICK (Ludwig) Zur pathologischen Anatomie der Ruhr im Dunndarm, zugleich ein Beitrag zur Kritik der sog primaren nodularen Ruhr [**Pathological Anatomy of Dysentery of the Small Intestine. The So-called Primary Nodular Dysentery.**]—*Arch f Verdauungs Krankht* 1926 Vol 37 pp 102–118 With 3 text figs [20 refs]

A detailed description and discussion of the morbid histology and gross anatomy of the small intestine in dysentery as reported by many authors and as observed by this author himself

H M H

MIXED AND UNCLASSED DYSENTERY

MANIFOLD (J A) **Prevalent Type of Dysentery in India.** [Correspondence]—*Jl Roy Army Med Corps* 1926 Mar Vol 46 No 3 pp 238–240

Major Manifold s letter contains extracts from a communication from Major KNOWLES, Professor of Protozoology School of Tropical Medicine, Calcutta, commenting on Manifold s paper on the above subject (*ante* p 395) Major KNOWLES writes that the misuse of emetine is rampant and harmful Emetine does not soothe the bowel In cats it causes irregular and violent peristalsis It can do nothing but harm in bacillary dysentery He has never seen ' cysts in the stools of acute amoebic dysentery It is not uncommon to find an occasional cyst or even vegetative form of *E histolytica* in bacillary dysentery occurring in a histolytica carrier Mixed amoebic and bacillary infections are not rare FLETCHER at Kuala Lumpur from study of post-mortem material estimates that 25 per cent of cases are mixed At any one time, however, one infection predominates "Dead amoebae" no one can identify "Macrophages"—"*this is the cardinal error*" It is on the finding of these, with ingested r b c s, that all these erroneous percentages of amoebic infection are based He who hasn t learnt, or won't learn, calls the first macrophage that he sees *E histolytica* If cysts plus vegetative forms ever occur together, it is not in the acute amoebic stool, but in a semi-fluid stool in a carrier

H M H

i MITCHELL (G F), JERWOOD (B E), BONEY (Knowles), JERWOOD (B E), LEDINGHAM (J C G), BONEY (Knowles) **Dysentery in Mesopotamia.** [Correspondence]—*Brit Med Jl* 1926 Mar 6, 20 27, Apr 3, June 5 & 19 pp 449, 545, 594, 635–636, 966–967, 1062

ii BRITISH MEDICAL JOURNAL 1926 June 26 pp 1097–1098 **The Health of the Army. Annual Report for 1924.**

i Comments following on Knowles BONEY s criticism of the Army Report on the prevalent type of dysentery in Mesopotamia [*ante*, p 396]. In support of Knowles Boney MITCHELL records that in his laboratory work in Mesopotamia 1917–20, he found two cases of bacillary to one of amoebic dysentery JERWOOD however, writes that while in charge of dysentery wards of No 133 British General Hospital, Kut-el-Amara June 1917 to January 1920, the stools of all cases entered as 'clinical dysentery were examined Thus—March to December 1918—"Clinical dysentery' 149, *E histolytica* 141 Entamoeba-free 6, *B dysenteriae* 0 no organism 2 Though he personally did not do the bacteriological work, he knew that *E histolytica* was reported present only when (1) It was seen to be active and containing r b c s, or (2) tetragenous cysts were present All the other hospitals in Mesopotamia obtained different results, but probably conditions in Kut in 1918 most nearly resembled those in Mesopotamia now He supposes that defective sanitation generally, including water supply, is the chief aetiological factor in bacillary dysentery, while house flies play the chief part in spreading amoebic dysentery In Kut, in 1918, sanitation and water supply were good, but house flies abounded, and probably that is the condition of affairs in Mesopotamia, for the army, to-day

Knowles BONEY replies that faulty observation must be the cause of the Kut findings of 94 per cent amoebic dysentery in 1918, so absolutely at variance with the findings of competent observers everywhere else in Mesopotamia during before and after 1918 Local conditions peculiar to Kut could in no way explain this discrepancy There is no evidence that amoebic dysentery is primarily fly-borne and bacillary mainly water-borne Both are spread alike by infected water and 'the filthy feet of faecal-feeding flies The water supply of Mesopotamia during the period in question was probably quite as good as it is to-day He had found in his weekly examinations no lactose fermenters in 10 cc There is a slight seasonal variation in the two types of dysentery, amoebic being higher in the hot weather, also amoebic occurred in rather higher percentage among the Indian troops Neither of these factors has any bearing on the point in question

JERWOOD's rejoinder adds that —

> " 1 Not only in 1918 but for the two and a half years that the hospital existed at Kut, *E histolytica* was usually found in dysenteric stools
>
> ' 2 During that time at least four different men did the bacteriology
>
> ' 3 Since Kut failed to agree with the majority, the work there received constant supervision from the consulting pathologist and each successive worker was warned against reporting the presence of *E. histolytica* unless perfectly sure about it
>
> 4 In 92 cases out of the 141 in which *E histolytica* was reported it was specially stated ' *F hist* tissue invading meaning that the amoebae were seen showing activity and containing the red blood cells "

[We suggest that the unmentioned " macrophage " was the villain of the piece in Kut as elsewhere]

LEDINGHAM supports BONEY and MITCHELL Mesopotamian dysentery as he had fully analysed (see this *Bulletin*, Vol 17, page 31) was amoebic only to the extent of 20 to 25 per cent of cases *Epidemic dysentery* in Iraq as elsewhere, was bacillary Army Report (1923) states that in Iraq admission rate for dysentery rose from 10 2 to 104 3 per 1 000 owing to an outbreak of dysentery and diarrhoea affecting a column of troops operating in Northern Kurdistan in April, when some 200 cases occurred Is it conceivable that these cases were in the main amoebic ? He thought not and concluded that Iraq dysentery had not changed

Knowles BONEY says the importance of the matter needs no stressing, for the *Report of the Health of the Army for the Year* 1923 stands as an official record bearing the stamp of authority and carrying weight that does not attach to the publications of private individuals The figures in that report are completely at variance with the known facts concerning the epidemiology and bacteriology of dysenteric disease

ii In this it is stated that —

> A short note on dysentery is important in view of the controversy that arose in connection with the record of amoebic dysentery in 1923 [*v* abstracts *T D B* above] The report for 1924 gives no information regarding the commands in which this form of dysentery occurred but states that of a total of 810 admissions 707 were diagnosed as amoebic, 48 as bacillary 54 as unclassified and 1 as a carrier As 669 of the cases occurred in India and 39 in Iraq it may be assumed that the majority of the cases diagnosed as amoebic were geographically east of Suez a fact which again corresponds with previous official returns Doubts are, however, being thrown on the accuracy of the diagnosis, and investigations are now proceeding to determine whether as has been suggested, bacillary dysentery is not more prevalent than the records disclose '

H. M H

MAIRE (Georges) Le traitement des dysenteries par le treparsol [**Treatment of Dysentery by Treparsol.**]—*Bull Med* 1926 May 1 Vol 40 No 19 pp 530–532

The author notes that to RAVAUT belongs the credit of having first used arsenical compounds by the buccal route in the treatment of chronic dysenteries The excellent results obtained by MARCHOUX with stovarsol in amoebiasis and flagellate dysentery have led to further experiment with other spirillicide arsenicals in treating these affections The latest of these is treparsol It is a formyl derivative of the oxy-amino-phenyl-arsenic acid, of stable composition but less active than the unstable acid itself. Tréparsol decomposes in the intestine into formic acid and meta-amino-para-oxy-phenylarsenic acid. This acid is the active principle of stovarsol and is said to act directly on the intestinal parasites. FLANDIN's work showed this compound to be very active in treatment of amoebic dysentery [see this *Bulletin*, Vol. 22. p 353]. The author has used it in the region of Damascus and Djebel-Druze, where amoebic dysentery is endemic and flagellate dysentery also common, both alone and with other drugs, notably emetine, for adults and children. He concludes from its use in a small number of cases that tréparsol is a medicament of the first rank in the treatment of dysentery.

In acute amoebic dysentery it should be combined with emetine. These two drugs produce rapid sterilization. Tréparsol is also a specific for flagellate diarrhoea, notably for trichomonas and lamblia, especially in their encysted forms. Obstinate diarrhoea, chiefly post-typhoid, is also susceptible to tréparsol treatment. Tréparsol for adults is given in tablet form, 4 a day—dissolved in water, for 4 days—a break of 3 days and then 4 more days of tréparsol 4 tablets a day.

H. M. H.

DRAKE-BROCKMAN (R. E.). **Some Observations on the Treatment of Chronic Dysentery.**—*Lancet.* 1926. May 1. pp. 905–906. [5 refs]

The cases were all pensioners treated in the clinics and hospitals of the Ministry of Pensions and the chronicity of the dysenteries varied remarkably They comprise bacillary and amoebic dysenteries, and mucous colitis in which no pathogenic organisms were found, as well as cases infested with Lamblia, Tetramitus, Trichomonas and *Spirochaeta eurygyrata.* Whereas many hundreds have been cured, a small percentage of cases will require periodical treatment, and a few have proved resistant to every known treatment.

Chronic bacillary dysentery. In most of the cases the causative agent has long disappeared from the stools. B. Shiga has not been found. B. Flexner has been found on rare occasions ; this organism lying embedded in the sites of the old intestinal ulcers causes the colitis and repeated exacerbations of the disease. These cases show alternate constipation and muco-diarrhoea with occasional blood. Cure will eventually be obtained only by treatment and restricted diet continued over a period of many months. Bismuth, simarubae et punicae granati decoctum,salol, kerol, and dimol have all been ineffective. Better results have been given by stovarsol or the mixture of tr. ferri perchlor. Mxx. with liq. hydrarg. perchlor. ½ drachm in ½ oz. of water, to be further diluted when taken ter in die after meals. This must be continued for months with restricted diet, and a nightly dose of paraffin to prevent constipation. In cases with loose stools great benefit followed stovarsol, one 4 grain tablet twice daily for a fortnight and then one tablet nightly for a fortnight. No success had been obtained from the use of parathyroid and calcium lactate in a few selected cases.

Chronic amoebic dysentery. These patients are usually healthy looking, even though passing, perhaps, stools of almost pure mucus and blood containing active vegetative forms of the parasite. This free evacuation of active amoebae may account for the fact that such intractable cases seldom develop liver abscess, of which chronic constipation is invariably the precursor. Pushing the use of ipecacuanha and its derivatives to excess renders the amoebae emetine-fast. Courses of treatment should therefore be given at intervals, notwithstanding presence of entamoebae in the stools. Between the courses of ipecacuanha, yatren or kurchi may be given for a month. Of yatren should be given three pills thrice daily for a fortnight, then 2 pills t.i.d. for one week and for the fourth week one pill t.i.d. Where the sigmoidoscope shows definite ulceration in rectum a 2–4 per cent. solution yatren can be injected and retained in situ for several hours. When, however, the lesions are higher up in colon or in the caecum no drug can at present replace ipecacuanha and its derivatives. Kurchi is a useful adjuvant in some cases, while in others benefit follows the use of massive doses of bismuth. In all cases diet should be kept low during drug therapy. In out-patients good results had been obtained by the use of bismuth subnitras, gr. 30 combined with 10 gr sodae bicarb. t i d ; later, doubling the bismuth and keeping the treatment on for three or four months with pulv ipecac. radix in 10–20 gr doses in cachet at bed time for the first month or two only. Emetren was tried without success in a case of chronic resistant amoebic dysentery.

Mucous colitis with infestations. Of these, Lamblia is most common and may aggravate the mucous colitis following true dysentery. Trichomonas, Tetramitus and *Sp. eurygyrata* will all disappear from mucous diarrhoeic stools so soon as the true dysenteric cause be found and treated.

H. M. H.

KÖHLER. Ueber Antidysten. [**Antidysten.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg* 1926. Vol. 30. No. 1. pp. 118–120.

The author's recent visit to Venezuela, where he saw in consultation many cases of amoebic and bacillary dysentery, and his 30 years' experience in the tropics and in Germany of these dysenteries, have prompted the advocacy, in the treatment of these diseases, of cort. simarubae, cort. granati, and lignum campechianum. For long these drugs have been used with success, in intestinal ailments, by the natives of the West Indies and South America. They have not come much into favour in Europe because they have not been used in effective preparations or proper fashion. He has obtained good results always, from a combination of these drugs, in the form of a fluid extract—Antidysten. It is successful not only in the dysenteries, but also in cases of meat, fish and shell-fish poisoning. Antidysten acts on the sympathetic nervous system, and as a general vasoconstrictor, as evidenced, after its use, by the decrease in number of stools and amount of blood in them, respectively. Simaruba, at least, has been shown by KROGMANN to be a vasoconstrictor. Soon after use of Antidysten the stools, furthermore, lose their pungent odour and become more solid. It has no constipating effect. The dose for adults is a tablespoonful every 12 hours—for children a tea- or dessert-spoonful according to age. If vomited it could be given per rectum—for adults 2 tablespoonfuls in oat gruel, or other vehicle If retained in the gut for 10–15 minutes, the results were as good as when given by mouth. He cites in support other physicians whose experience of Antidysten in treating dysenteries had been entirely favourable

—notably K JUSTI, Hongkong, 1913 "In 7 acute cases, after the first dose the diarrhoea ceased and the stools became formed Its results in chronic bacillary dysentery were astonishing, patients with diarrhoea for weeks and months were cured in a few days"

H M H

MILLER (Reginald) **Lambliasis as a Cause of Chronic Enteritis in Children.**—*Arch of Disease in Childhood* 1926 Apr Vol 1 No 2 pp 93–98 [6 refs] and *Proc Roy Soc Med* (Section for Study of Disease in Children) 1926 May Vol 19 No 7 pp 44–45

Lamblia infections have become common in England only since the war DOBELL (1920) gave lamblia-carrier-rate as 18–27 per cent of people in Great Britain, and stated that the protozoon is especially common in children's faeces PERKINS (1921) found out of 120 children (including a considerable number of infants) consecutively admitted to hospital, 7 with lamblia in the faeces—5 8 per cent In the author's experience the infection is very much commoner in the hospital class of children than in those dealt with in private practice His paper is based on a study of 23 children infected with lamblia In them the infection resembled coeliac disease more than any other disorder In both there is persistent diarrhoea, some enlargement of abdomen and retardation of growth but symptoms are far more severe and invalidism far greater in coeliac disease Stools apparently containing an excess of fat may occur in the lamblia cases, several times this led to a suspicion of coeliac disease but on sending stools to be analysed the report was lamblia infection The lamblia stool is that of chronic entero colitis It contains much undigested food and mucus and perhaps is slightly fatty In coeliac disease the great abnormality is excess of fat without evidence of enteritis or maldigestion of non fatty foodstuffs The most harmful effects of lamblia infection occur in the youngest subjects It causes wasting and retarded growth, the diarrhoea is worst at onset of infection and persists for many years—throughout childhood Ordinary disinfectants and stovarsol have proved useless The author does not agree with those who state that the infection is harmless So far as children are concerned this is untrue In cases of long-standing diarrhoea in children, where examination shows no other abnormality than a heavy infection with lamblia, it is not unreasonable to assume that this is the cause of the symptoms, the diarrhoea may last 8 or 10 years There is no evidence that disorders of the intestine predispose towards lamblia infection In children true carriers showing no symptoms of the infection may be found, and the infection is now by no means a rarity in hospital practice among children

H M H

ALESSANDRINI (Paolo) & PIATTELLI (Adriano) Contributo alla conoscenza della dissenteria da *Balantidium coli* [*Balantidium coli* **Dysentery.**]—*Policlinico* Sez Prat 1926 Apr 5 Vol 33 No 14 pp 469–474 [5 refs]

A case of balantidial dysentery in a woman of 29 years is described There were numerous evacuations with blood, much pain and tenesmus

Treatment with emetine, 8 cgm. daily for five days, was adopted. After the second injection there was marked improvement; the temperature became normal, the stools numbered only three or four in the 24 hours, and the parasites could no longer be found. The pain subsided sufficiently to allow sigmoidoscopy to be performed, when ulcers were seen which bled readily, but no protozoa could be detected in the material taken from the bases of them. The patient left hospital on the eighteenth day apparently well and had not returned; the authors, therefore, cannot be certain that the cure was permanent. The remainder of the paper is devoted to a general account of the subject of balantidial dysentery.

H. Harold Scott.

Huppenbauer (C. B.). Die Yatren-105-Therapie der Amobenruhr.—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Vol. 30. No. 1. pp. 112–117.

——. Therapeutica da amoebiase Yatren 105.—*Sciencia Medica.* 1926. Feb. 28. Vol. 4. No. 2. pp. 84-88.

PELLAGRA

i. GOLDBERGER (Joseph), WHEELER (G A), LILLIE (R D) & ROGERS (L M) **A Further Study of Butter, Fresh Beef, and Yeast as Pellagra Preventives, with consideration of the Relation of Factor P-P of Pellagra (and Black Tongue of Dogs) to Vitamin B.**—*Public Health Rep* 1926 Feb 19 Vol 41 No 8 pp 297–318 With 5 charts in text [27 refs]

ii — & LILLIE (R D) **A Note on an Experimental Pellagralike Condition in the Albino Rat.**—*Ibid* May 28 Vol 41 No 22 pp 1025–1029 [4 refs]

i An account is here given of further experiments dealing with pellagra-preventive factor (factor P-P) and its presence or absence in certain food-stuffs Pellagrins in Georgia State Sanitarium were used for this investigation

It was found that butter, whether from Georgia or Vermont, given in daily amounts of 5 ozs was unable to prevent pellagra This substance is therefore poor or lacking in factor P-P On the other hand, lean beef given in daily allowance of 7 ozs completely prevented the disease, as did also dried yeast extract (½ oz daily)

Experiments were carried out upon dogs suffering from black tongue It was shown that those substances which were potent in preventing pellagra were similarly potent as regards black tongue, and those substances of low pellagra-preventive potency failed too in the canine disease The authors have therefore adopted the working hypothesis that pellagra in man and black tongue in dogs are analogous

The relation of factor P-P to water soluble vitamin B is considered The antineuritic constituent of this vitamin is not identical with factor P-P but the growth promoting moiety most probably is

ii A continuation of the work described above

In the dog yeast extract autoclaved for two and a half hours prevents black tongue but not polyneuritis In the rat also it does not prevent polyneuritis nor does it permit growth

Indian corn is fairly rich in antineuritic factor but it contains relatively little, if any, factor P-P An alcoholic extract of corn was fed to rats suffering from polyneuritis with the result that recovery occurred unless the condition was too far advanced Healthy young rats fed upon a diet the vitamin B content of which was represented by 6 per cent or more of this extract showed some initial growth, but sooner or later their weight began to decline and they developed not polyneuritis but a condition resembling pellagra When this diet was supplemented by a substance known to contain factor P-P sustained growth resulted Such a substance was found in yeast extract adsorbed by fuller s earth It appears, therefore, that vitamin B contains two parts, one antineuritic and thermolabile, the other growth-promoting and thermostable Factor P-P is thought to be identical with the latter

The pellagra-like condition developing in rats in which vitamin B in the diet was represented by alcoholic corn extract is as follows — The first symptom is ophthalmia with, at the same time or occurring shortly afterwards, a loss of fur This latter may lead to complete denudation of the head, neck and trunk In less advanced cases the depilation is often bilaterally symmetrical and sharply defined. With or without such depilation some of the animals develop a dermatitis, also sharply outlined and bilaterally symmetrical, on one or more of the following sites—ears, front of neck and upper part of chest, forearms, backs of fore-paws, shins and backs of hind-paws In addition certain of the animals presented a glossitis and two had diarrhoea It was found that when factor P-P was given the symptoms cleared up and growth was resumed

The authors admit that while it is highly probable that this condition in the rat is the analogue of human pellagra additional evidence is required

A D Bigland

MOOK (William H) & WEISS (Richard S) **Pellagra. Two Instructive Cases.**—*Arch Dermat & Syph* 1925 Nov Vol 12 No 5 pp 649—656 With 5 text figs [3 refs]

Two cases of pellagra are described in detail on account of their bearing upon the protein-deficiency origin of the disease

Case 1 White girl, aged 16 Finding herself at the age of 14 6 ft 1 in in height and 190 lbs in weight she decided to diet herself The regular diet of the family was not well balanced to start with, so that when she omitted one meal a day and took for the rest a preponderance of fat and carbohydrate pellagra developed

On admission to hospital she weighed only 71 lb Forthwith a pure protein diet was instituted but still she lost weight There was added, therefore, cod liver oil, tomato juice hydrochloric acid and pepsin, thyroid extract bile salts, pancreatin and taka diastase By this time her weight had dropped to 55 lb but in less than two months it had increased to 100 lb and the pellagra symptoms had disappeared

Case 2 White vagrant, aged 52 Previously his meals had been scanty and very poor in quality On a pure protein diet he made a complete recovery An interesting feature of the case was the experimental production of a typical pellagrous dermatitis by exposing the chest to sunlight This dermatitis lasted a long time and only disappeared when the rash in the usual situations began to fade

The authors consider that " the first case is strikingly confirmatory of GOLDBERGER's dietary deficiency theory and the second case of JOBLING and ARNOLD's theory that the circulation in the blood of porphyrins and other photosensitive substances is responsible for the skin manifestations of pellagra '

A D B

BARNES (John M) **Typical Pellagra Syndrome developing in Patient with Chronic Ulcerative Colitis while under Hospital Treatment.**—*Ann Clin Med* Baltimore 1926 Jan Vol 4 No 7 pp 552–564 With 4 text figs

A case of pellagra occurring in a patient suffering from chronic ulcerative colitis is described The patient was a coloured married woman aged 24 In June 1924 she began to feel ill but diarrhoea did not begin until the following October She was in hospital in November and December of that year and was then discharged because she refused operation She was readmitted at the end of March 1925 In May, June and July a typical pellagra rash appeared The patient grew weaker and died in July A very full account of the autopsy is given The findings revealed little differing from the usual post-mortem appearances found in these cases except that "the marked degenerative changes in the central nervous system emphasised by some writers were not shown in this case, nor have they been in several other cases of typical pellagra studied in this laboratory"

It appears that this patient in May 1924 (i e , prior to all symptoms) had a non-pruritic rash on both hands which cleared up spontaneously " She had also left a pellagrous locality only six months before the first definite symptoms appeared The author admits that the initial rash may have been in reality pellagra It would seem, therefore, that the colitis was merely the usual concomitant of pellagra, so that the title of this paper is somewhat misleading

A D B

NUZUM (Franklin R) **Pellagra associated with Annular Carcinoma of the Terminal Portion of the Ileum.**—*Jl Amer Med Assoc* 1925 Dec 12 Vol 85 No 24 pp 1861–1862 [5 refs]

Mechanical obstruction to the alimentary tract interfering with nutrition is known to be associated with pellagra A number of such cases collected from the literature are described These deal with obstruction situated in the stomach To this series the author adds two cases of his own in which the obstruction was a carcinoma involving the lower end of the small intestine Both the patients were males of white race, aged 58 and 68 respectively and both died, autopsies being performed

It is interesting to note that the time elapsing between the onset of pellagra symptoms and the admission of the patient to hospital was in one case four months and in the other two months It is possible that the onset of pellagra occurred shortly after the initial lesion began to cause obstruction

The author is of the opinion that ' these added instances of disturbance in nutrition as the result of mechanical obstruction of the small bowel give added weight to the dietetic origin of this disease '

A D B

DELAMARE (G) & DJEMIL (Said) Pellagre importée **[Imported Pellagra.]**—*Bull Soc Path Exot* 1926 Feb 10 Vol 19 No 2 pp 75-78

This paper deals with cases of pellagra as it was found in Constantinople among prisoners of war repatriated from Egypt or Anatolia in 1920 and since the evacuation of the Greeks from Asia in 1923 The only real epidemic outbreaks occurred in Selimié-Haidar-Pacha, where repatriated prisoners of war were gathered together Apparently, a very fatal outbreak took place in this district in 1920 No description of this is given, and the authors content themselves with describing three cases in detail

Case 1 Officer cadet, aged 25 Had his first attack of pellagra when in a prison camp in Egypt in 1919 In August 1921 he sustained a relapse, but the case was not fully investigated until December 1921 There were then no frank signs of pellagra, though the increased frequence of the pulse rate with hypotension and undoubted exaggeration of the deep reflexes led the authors to suppose that the man's present condition represented merely a remission. Stress is laid upon fibrillary tremors of the tongue when fully protruded as an important sign. This patient had eaten white bread for the last year with fresh vegetables and had only been deprived of meat for one month.

Case II. Soldier, aged 38. Repatriated from Egypt in January 1920. He was then suffering from pellagra. From this he recovered and went back to duty. In December 1921 he apparently had a relapse and mental symptoms supervening he died in February 1922.

Case III. Sous-officier, aged 37. In 1919 had pellagra in Belbis Camp. Repatriated from Egypt in October 1920. When examined in December 1921 there were no signs of pellagra, but the patient showed great weakness, wasting and profound mental symptoms. Having excluded Addison's disease and tuberculosis the authors regard this as a post-pellagrous condition

[It is to be regretted that in view of the large amount of work done upon pellagrous Turkish prisoners of war in Egypt this paper does not deal more fully with the after histories of the cases on their return to their native land.]

A. D. B.

DELAMARE (G.) & ACHITOUV. Pellagre familiale autochtone. [**Autochthonous Familial Pellagra.**]—*Bull Soc. Path. Exot.* 1926. Feb. 10. Vol. 19. No. 2. pp. 78–81.

Two cases of pellagra are described at Constantinople occurring in the same family. The first patient was a rabbi, aged 67. His initial attack took place in the spring of 1916. Following this he was quite well until the spring of 1921, when he had a relapse. He had not been out of Constantinople during the last 37 years. The second case, a relation of the first and living in the same house, was a shoemaker aged 47. He had never left Constantinople, and had not been in contact with prisoners of war. The authors lay stress upon the following syndrome in the diagnosis of pellagra: A red tremulous tongue protruded with difficulty; normal pupils, exaggeration of the tendon reflexes; clonus; abolished or diminished cutaneous reflexes and a normal cerebro-spinal fluid.

A. D. B.

POPOFF (P. P.). Le pellagre en Arménie en rapport avec l'état actuel de la question de son étiologie. [**Pellagra in Armenia and Present Knowledge of its Etiology.**]—*Oeuvres de l'Inst. Tropicale de l'Armenie.* 1926. Vol. 1. French summary pp. 8–9. [In Russian.]

The following points are extracted from the French abstract of the above paper.

Twenty-two cases of pellagra have been studied by the author in Armenia since 1923. He states that the disease has not yet been diagnosed in this country, and he is of the opinion that the high mortality rate proves its recent importation. Pellagra occurs not only among refugees from Turkey, but also in those who have never left the country, and a familial incidence of the disease is noted. Maize as a food is not known in Armenia, but Simulium was found in the pellagrous areas In one refugee hospice nine out of ten orphan children attacked, died Post-mortem examinations were made in four cases, but the details are as yet insufficient Histological studies are in progress Blood showed a slight lymphocytosis and the urine had, invariably, an acid reaction

A D B

MATUSCHKA (J) Ein Fall von genuiner Pellagra in Karnten [**A Case of Pellagra in Carinthia.**]—*Wien Klin Woch* 1926 Feb 4 Vol 39 No 6 pp 159–160 [1 ref]

The first case of pellagra occurring in Carinthia is here recorded The following is a brief account of the findings The patient a married woman of 50 had lived all her life in a local village Symptoms of the disease from the account of which the diagnosis is certainly correct, began in the spring of 1925 No specialized treatment was given, and attempts were made to keep up the patient s strength , these, however proved unsuccessful and in June 1925 she died

Autopsy revealed the usual conditions—brown atrophy of the heart atrophy of the mucous membrane of the stomach and upper part of the small intestine ulceration in the ileum and large intestine and central softening of the suprarenals

As an aetiological factor it is mentioned that maize and bad maize at that had figured prominently in the diet prior to the onset of the pellagra

With a view to ascertaining whether the skin of pellagrins is unduly sensitive to light rays experiments involving exposure of the skin to an arc lamp were instituted No greater reaction than occurred in normal patients was noted

A D B

SHELLEY (Horace M) **Some Observations on Pellagra in Nyasaland.**—*Nyasaland Protectorate Ann Med Rep* 1924 7 pp With 1 fig also in *Kenya Med Jl* 1925 Nov Vol 2 No 8 pp 235–244 [11 refs]

Pellagra was first found in Nyasaland by STANNUS in 1910 In 1922 its presence was again noted by MILNE-TOUGH This paper is based upon a study of pellagrins in the Central Prison Hospital, Zomba and in the general population It is to be noted that the disease is not confined to prisoners as was previously thought, cases having occurred amongst the general population and in the native soldiers of the King s African Rifles

The author is of the opinion that pellagra is not caused solely by diet He thinks that the disease is due to absorption of a toxin which produces a neuritis of certain peripheral nerves, since he found skin lesions most marked in the areas supplied by the following nerve roots viz Cervical 2–7 , lumbar, 4 and 5 and sacral 1

Besides the peripheral neuritis, the toxin is supposed to produce changes in the thyroid gland leading to insufficiency of thyroxin, and a parallel is drawn between myxoedema and pellagra Administration of thyroid extract gr 1 a day caused the skin lesions to disappear in from 10 to 15 days with physical and mental improvement Neither arsenic nor hydrochloric acid was of any avail

The prison ration was as follows: Maize meal, 1½ lbs., or rice, 1 lb., with ½ oz. salt. Fish or meat, peas, beans or nuts and vegetables, of each, ½ lb. 4 days a week.

A. D. B.

FARNELL (Frederic J.) & YACOVLEV (P. J.). **Pellagra and Beri-beri.**—*Ann. Clin. Med.* Baltimore. 1926. Jan. Vol. 4. No. 7. pp. 541–551. With 6 text figs. [4 refs.]

A case observed by the authors showing difficulty in differential diagnosis forms the starting point of a long argument in which it is attempted to prove that pellagra and beriberi are one and the same condition. A most elaborate comparison of the two diseases symptom by symptom and post-mortem appearance by appearance is offered in support of this contention.

The case may be summarized shortly as follows: Coloured man, aged 37—standard of living low—principal foods, fish and corn bread. In May 1925 he began to suffer from weakness, vomiting and diarrhoea. Later he became dizzy and developed an ataxic gait. The arms also became weak. He was admitted to hospital (Newport, Rhode Island) on June 3rd 1925. His condition then was: Mentality showed indifference; bilateral foot and wrist drop; marked wasting of muscles; variable oedema of hands, legs and face; deep hyperaesthesia; alterations in sensibility; deep reflexes absent; marked photophobia and dimness of vision at night; tongue the colour of beef; constipation. The skin showed irregular ecchymoses, an area of desquamation with lack of pigment on the left chest, desquamation on the feet and legs and a symmetrical vesicular dermatitis on the neck During his three months' stay in hospital there was slight improvement, though the muscular wasting increased

After excluding other possible diagnoses it was decided to call the case either pellagra or beriberi. As already stated the authors' opinion is that "there is no essential difference between these two diseases—they are probably different expressions of the same pathological condition."

[From the photographs reproduced and from the clinical description given pellagra, to say the least, is an improbable diagnosis.]

A. D. B.

BRAVETTA (Eugenio). Pellagra sporadica. [**Sporadic Pellagra.**]—*Boll. Soc. Med. Chirurg.* Pavia. 1925. Vol. 37. No. 6. pp. 913–924. With 1 fig.

The author calls attention to the fact that in 1915 cases of pellagra in Milan and its environs had been diminishing in number, and that since that date the disease was supposed to have disappeared, while the number of patients diagnosed as psychoses, due to the war or associated with encephalitis lethargica and cocainism, had increased. He then gives details of five cases which had come under his personal observation during 1925, all of which from the history and symptoms appear to have been definitely pellagrous, thus showing that the general belief that pellagra had been eradicated is erroneous.

H. Harold Scott.

GUTHRIE (J Birney) **Pellagra—Hydrochloric Acid in the Stomach Contents.**—*New Orleans Med & Surg. Jl* 1926. June. Vol. 78 No 12 pp 830–835 [11 refs]

In a series of 35 coloured female pellagrins a study was made of the astric hydrochloric acid content Achlorhydria is common in pellagra, the figures gathered from the literature varying between 28 and 100 per cent In the series under discussion achlorhydria was found in 62 8 per cent A comparison was made in this respect between 10 fatal cases and 25 non-fatal cases Hydrochloric acid was completely absent in 60 per cent of the former and in 64 per cent of the latter. The presence or absence of this gastric constituent is, therefore, of no prognostic significance though of some diagnostic value It is pointed out that diarrhoea itself may cause deficiency or absence of hydrochloric acid Out of 93 pellagrins diarrhoea was present in 76 3 per cent

The administration of hydrochloric acid to pellagrous cases is advocated as a therapeutic measure, a contraindication being soreness of the mouth, throat or oesophagus

A D B

SUSMAN (William) **The Morbid Anatomy and Histology of Pellagra.**—*Edinburgh Med Jl* 1926 Feb N S Vol 33 No 2 pp. 58–64 With 10 text figs

An account of the morbid anatomy and histology of two cases of pellagra one pronounced and the other " probable," is given.

Case 1 Female aged 46, pronounced pellagra The macroscopical changes found were similar to those in most of the other cases reported, i e , brown atrophy of the heart, atrophy of the intestinal mucosa, etc The most interesting of the histological changes were found in the endocrine system

(*a*) *Thyroid* —' A generalized fibrosis, epithelial proliferation in the vesicles marked congestion, and an embryonic adenoma are the most prominent features " Small round cells are found in abundance, and from the arrangement of these it is concluded that the irritant was spread by way of the lymphatics

(*b*) *Parathyroid* —There are small localized areas of fibrosis together with many plasma cells and other cells the appearance of which suggests an interstitial origin

(*c*) *Adrenals* — ' A non-inflammatory disintegration of cortical cells is present chiefly in the zona glomerulosa and less frequently in the zona fasciculata The scarcity of lipoidal vacuoles in the cortex is conspicuous In the medulla the cells are not as prominent as usual, and fibrosis has occurred to a moderate degree "

(*d*) *Pituitary* —In the pars nervosa congestion of capillaries, many haemorrhagic areas and some neuroglial proliferation were seen In the pars anterior in addition to marked congestion acidophilic cells, small but numerous, and not showing the usual red granules were encountered Basophilic cells were very abundant

In certain regions of the spinal cord a unilateral degeneration of the dorso-spino-cerebellar tract was noted No mention of cortical changes is made

Case 2 Showed very similar changes in the endocrine system.

The author concludes that the oldest lesion is in the thyroid. Metabolic disturbances and changes due to the causal agent are responsible for the liver damage. Toxic material is excreted through the kidney, causing degeneration and later fibrosis.

[These results would have been of greater value had the author examined other endocrine organs of the same age as controls.]

A. D. B.

MOURIQUAND (Georges). Syndrome pellagreux. Sa réalisation expérimentale. [**Experimental Pellagra.**]—*C.R. Acad. Sci.* 1926. Feb. 1. Vol. 18. No. 5. pp. 347–348.

The author describes experiments with guineapigs which were subjected to the following régimes :—

1. A diet consisting of maize with, in addition, vitamin C, fat soluble vitamin and nitrogenous and mineral elements.

2. A diet consisting only of maize and vitamin C.

In each series some of the animals were exposed to ultra-violet rays, and others were not.

The results of the experiments may be tabulated as follows :—

(1) The rays had no effect on the determination of cutaneous lesions.

(2) The animals in series 1 remained well nourished and showed no change in their coats, etc

(3) The animals in series 2 in 6 out of 7 cases showed marked falling of the hair, beginning at the 18th to the 20th day. This occurred whether the maize was whole or polished.

The author is of the opinion that the pellagra-producing power of maize is only exercised in the presence of a partially unbalanced diet.

A. D. B.

MOURIQUAND (Georges). Existe-t-il une vitamine antipellagreuse ? [**Is there an Antipellagrous Vitamin ?**]—*C R. Soc. Biol.* 1926. Mar. 5. Vol. 94. No. 8 pp. 498–499. [1 ref.]

From considerations of the author's own work (see above) together with the fact that peasants in Roumania and Bulgaria eat whole maize, it is concluded that FUNK's anti-pellagra vitamin does not exist in the cuticle of maize.

A. D. B.

RABIES · A REVIEW OF RECENT ARTICLES V

During the last six months a number of important contributions have appeared relating to the relative prevalence of paralytic accidents with various forms of antirabic immunization, and to their causation This subject was referred to in some detail in my last review (*ante*, p 195) in its statistical aspect, and reference has already been made to the experiments of KORITSCHONER and SCHWEINBURG in which, after the exhibition of large doses of normal rabbit brain substance, 16 out of 72 rabbits showed paralyses [this *Bulletin*, Vol 22, p 699] All observers agree as to the existence of a definite relation between the amount of nerve substance inoculated and the probability of accident, but certain find difficulty in accepting KORITSCHONER and SCHWEINBURG's experimental results QUAST and LICHT[1], after a lengthy and critical examination, suggest that the paralyses may have been caused by some other neurotropic virus introduced with the inoculant It has been observed they state that the brains of men who have not suffered from the symptoms of encephalitis lethargica, when inoculated into rabbits, may give rise to encephalitis, which is transmissible on subpassage (JAHNEL and ILLERT, *Klin Wochenschr*, 1923, p 1731)

CORNWALL and BEER[2] put forward the criticism that in addition to the possibility of a high susceptibility amongst the animals employed, "one cannot avoid suspecting that there was some additional factor at work to account for the high mortality in their series ' They suggest, "that this may have been unhygienic surroundings, or a defective diet, in the absence of specific information on these points" CORNWALL and BEER[3] analyse the various experiences on the basis of dose per body weight, and calculate that KORITSCHONER and SCHWEINBURG employed doses varying from 15 to 225 mgm per kilo body-weight and that HARVEY and ACTON (1922) showed that 1,060 mgm per kilo were highly toxic They themselves, using the Indian carbolized virus gave doses of 11 to 800 mgm per kilo and observed only one case of paralysis amongst 40 rabbits They conclude that phenol slightly reduces the toxicity of nerve substance This conclusion is supported by an analysis of statistical evidence They calculate that in dried cord treatment the total dosage varies from 18 to 46 mgm per kilo in treatment according to Hogyes method the dosage is 0 8 to 3 8 mgm per kilo, and in treatment by carbolized methods the dosage is 11 mgm per kilo (Indian method) and 94 (Fermi)

As accidents have not so far been recorded after treatment by carbolized vaccines, and very few with Hogyes' method in its usual dosage, they conclude that the maximum safe dose of fresh cord is about 3·8 mgm per kilo for fresh nervous material, and about 10 mgm. per kilo for carbolized material

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* For the fourth of this series see this Volume, pp 194–200

[1] QUAST (Gerhard) & LICHT (Hans) Ein Beitrag zur Frage des Entstehens der postvakzinellen Lähmungen bei Lyssa —*Cent f Bakt* I Abt Orig 1926 Apr 1 Vol 98 No 3/4 pp 211–216 [8 refs]

[2] CORNWALL (J W) & BEER (W A) The Effect of Etherized Normal Brain Substance injected Subcutaneously into Rabbits —*Indian Jl Med Res* 1926 Apr Vol 13 No 4 pp 807–816 With 4 charts in text [2 refs]

[3] CORNWALL (J W) & BEER (W A) On the Occurrence of Paralyses after Treatment with Antirabic Vaccine —*Indian Jl Med Res* 1926 Jan Vol 13 No 3 pp 467–474 With 2 charts in text [4 refs]

Two very important additions to our knowledge are furnished by the papers of V D HOVEN V GENDEREN[4] [5] and of BOECKER[6] The former has analysed the statistics of the Pasteur Institute at Weltevreden, (now transferred to Bandoeng) (Java) From 1895 to 1906 the dried cord method was used, and from 1906 to 1922 the method was that of HOGYES Amongst a total of 13,396 Europeans so treated 21 cases of paralyses occurred, and the interesting fact emerges that these cases were confined in both instances to the later years of the particular form of treatment Analysis showed that of 704 patients treated by a dried cord method in which a 1-day dried cord was not exhibited before the 15th day, no case of paralysis occurred whereas amongst the second or later group of 719, when a more intensive treatment was given, in which 1-day dried cords were exhibited on the 4th day of treatment or earlier, 10 cases of paralysis occurred The same phenomenon was observed with Hogyes' method No accidents amongst 212 patients were observed in the period 1906–1907, when the total dosage was 35 mgm to 198 mgm Again, during the period 1908–1909, when the dosage was 35 to 765 mgm , there were no accidents amongst 305 persons From 1910 to 1912 when the dosage was further increased to 92 to 1 015 mgm , 5 accidents occurred amongst 434 patients , and from 1912 to 1922, with a dosage of 92 to 605 mgm , 4 accidents were reported amongst 2 421 patients Further examination showed that in the latter two periods accidents were confined to patients who received more than 300 mgm of fixed virus brain substance As with the earlier and lighter dried cord methods at least 1,000 mgm was administered with no accidents, the author concludes that this toxic effect is removed by drying

The experience of the Berlin Pasteur Institute analysed by BOECKER[6] supports these conclusions, whilst drawing attention to a paper by PAPAMARKU (*Zeitschr f Hyg u Inf*, 86, 85, 1918) in which similar deductions had been made During the period 1914–1917 when treatment was very intense (1-day dried cords being exhibited on the 3rd and 4th day of treatment), 8 accidents occurred amongst 903 patients (0 89 per cent) Within the next period 1915–1923 (when 1-day dried cords were not given earlier than the 8th day), 13 accidents were observed amongst 4,113 patients (0 32 per cent) During a third period, 1916–1923, when nothing stronger than 3-day dried cords was administered, only 2 accidents were observed amongst 1,070 patients (0 19 per cent) The author also states that certain of these accidents occurred in cases in which the dog which was concerned remained healthy Since 1923 treatment has been by the Hogyes-Phillips method (1 part F V brain in 9 parts glycerine, diluted finally to 1 in 25 with physiological saline, and in doses varying from 0 25 to 2 cc) Amongst 4 063 persons treated according to this method 5 have suffered from accident, or 0 123 per cent

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[4] VAN DEN HOVEN VAN GENDEREN (Jeanne) Ueber eine Anzahl Paralysen die im Verlauf der antirabischen Behandlung im Institut Pasteur zu Weltevreden vorkamen —*Ztschr f Hyg u Infektionskr* 1925 Nov 9 Vol 105 No 2 pp 427–449 [29 refs]

[5] VAN DEN HOVEN VAN GENDEREN (Jeanne) Opmerkingen naar aanleiding van een aantal paralysen voorgekomen in het verloop der antirabische bahandeling aan het Institut Pasteur te Weltevreden —*Geneesk Tijdschr v Nederl -Indië* 1925 Vol 65 No 6 pp 677–715 [9 refs] [Dutch version of (4)]

[6] BOECKER (E) Zur Frage der Impflähmungen und der Erfolge bei verschiedenen Methoden der Tollwutschutzimpfung —*Ztschr f Hyg u Infektionskr* 1926 Mar 18 Vol 106 No 1 pp 151–185 [23 refs]

Summarizing these results and observations we must conclude that the larger the quantity of vaccine given the greater is the danger of accident, and that the more a cord is dried the less is the danger To these facts must be added the observation of CORNWALL[3] that the probability of accident is reduced by phenol and that of ALIVISATOS[8] that ether has a similar effect (1 accident amongst 6,500 cases treated) If one accepts the statement that normal brain substance itself increases the liability to accident, then the problem would be a comparatively simple one but one has to face the fact that KORITSCHONER and SCHWEINBURG found that dried normal brain substance was more toxic than fresh The issue is still obscure and further systematic animal experiments are necessary CORNWALL and BEER's[2] observation that the ether extract of normal sheep's brain when injected in quantities corresponding to 500 mgm per kilo of original sheep brain substance produced no ill effects upon 10 rabbits shows that the effect of ether is not that of a simple extraction of a toxic material Were it not for KORITSCHONER and SCHWEINBURG's observation that drying increases the toxic action of normal nerve substance one might return to HARVEY and McKENDRICK's view (*Sc Mem Gov of India* 1907) that accidents are anaphylactic in character the effects of drying and of ether and phenol causing the protein to become denatured, and so to lose its specificity (as shown by PICK) Further experiments on the relative toxic effects of large quantities of normal brain substance, in doses such as were used by KORITSCHONER and SCHWEINBURG, fresh and denatured according to the different methods, are eminently desirable

ISABOLINSKY and ZEITLIN[9] report only one case of paralysis during fifteen years' experience The method of treatment employed is that of CALMETTE

Before leaving this question it is only fair to add that Dr Joseph KOCH[7] (Berlin) does not agree with BOECKER and PAPAMARKU's conclusions He has never seen a case of vaccinal rabies His views on the harmlessness of pasteurian treatment remain undisturbed even by the work of VAN GENDEREN Tropical results cannot be compared with European They may be mixed infections with malaria and other tropical complaints Accidents may, in his opinion, be due to the combined action of fixed and street virus VAN GENDEREN's[5] experience is, however, against this view In her statistics it appears that of those who suffered from paralyses, 5 were patients who had only been licked, 2 occurred amongst the staff of the institute, and had neither been bitten nor licked and in the case of 2 others it was subsequently proved that the biting animal was not rabid (one remained alive and well)

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[7] KOCH (Jos) Bemerkungen zu der vorstehenden Arbeit von Boecker — *Ibid* pp 186–187

[8] ALIVISATOS (G P) Neue Erfahrungen bei der Schutzimpfung gegen Lyssa durch das atherisierte Virus fixe —*Cent f Bakt* I Abt Orig 1926 May 5 Vol 98 No 5/6 pp 394–407 [6 refs]

[9] ISABOLINSKY (M) & ZEITLIN (A) Ueber das intensive Verfahren der Schutzimpfungen gegen Lyssa —*Ztschr f Immunitätsf u Experim Therap* 1925 Dec 10 Vol 45 No 3/4 pp 301–304

ii. *The Virus.*

CORNWALL and BEER[10] criticize the conclusion of LEVADITI and NICOLAU (*C.R. Soc. Biol.*, 1925, Vol. 93, pp. 3–7), that the fact that subpassages made from animals inoculated with street virus and killed on the 4th day could not be transmitted beyond the 3rd or 4th generation, is in favour of the existence of an evolutive cycle in the development of the rabies organism. A similar experiment was carried out with Coonoor strain of fixed virus (940th passage), which usually gives rise to symptoms on the 5th day in rabbits. They found that subpassages made on the 3rd day could not be transmitted beyond the 2nd generation, whilst subpassages made on later days continued indefinitely. They conclude that by the 4th day sufficient virus had been developed in the brain to enable the infecting dose (0·01 gm. of brain substance) to transmit the infection. " If the incubation period of the street virus used by Levaditi and Nicolau at all approximated to the usual average of 14 days, the result which they obtained was to be expected " CORNWALL and BEER conclude that the phenomenon is due to a slower rate of growth of street virus in the brain as compared with fixed virus

MANOUÉLIAN and VIALA[11] examined the variation in number of Negri bodies and of the small dots, which they consider to be the *Encephalitozoon rabiei*, in successive subpassages. The former quickly disappear, whilst the latter " remain a constant evidence of all forms of rabies infection," even when virulence is increased by subpassages.

ANDO[12] tested the virulence of fixed virus which had been subjected to various treatments; and found that the best vaccines for dog inoculation were those which had been kept at 37° C for 3 days, or 22° C. for 5 days.

CORNWALL and BEER,[13] in a further communication, plead for a standard method whereby the virulence of various strains of fixed virus in use at different institutes may be compared, and by means of which the protective power of a vaccine prepared from any strain of fixed virus against any strain of street virus may be determined. For testing the virulence of fixed virus they suggest that the test animals should be albino rats weighing between 80 and 120 gm. . that the infective dose should be 0·01 gm. per 100 gm. body weight, given in a dilution of 1 part in 50 parts 0·85 saline · that inoculation should be into the subcutaneous tissue of the left loin : that not less than 100 animals should be used for each determination : the result being read in terms of the percentage of animals which developed rabies. For the Coonoor strain of F. V. (940th passage), they proved that this percentage was 14·6 (18 deaths amongst 123 albino rats).

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[10] CORNWALL (J W) & BEER (W A) On the Rate of Multiplication of Rabies Fixed-Virus in Rabbits —*Indian Jl Med Res.* 1926. Jan Vol 13. No 3 pp 475–481. [1 ref]

[11] MANOUÉLIAN (Y) & VIALA (J.) Exaltation du virus rabique et corps de Negri —*C.R Acad. Sci* 1926 May 25. Vol. 182. No. 21 pp. 1297–1298.

[12] ANDO (Keizaburo) [Studies on the Virulency of the Fixed Virus of Hydrophobia]—*Jikken Igaku Zasshi* (*Jl Experim Med*) 1925 Feb Vol 9. No 2 [Summarized in *Japan Med World.* 1925 Nov 15. Vol 5. No 11 p 321]

[13] CORNWALL (J. W) & BEER (W A) The Assessment of the Infectivity of Rabies Fixed-Virus by Means of Albino Rats —*Indian Jl Med Res.* 1926 Apr Vol. 13. No 4. pp 803–806. [2 refs.]

PLANTUREUX[14] has examined the Algerian Fixed Virus (1,500th passage) and found that it transmits infection when administered intraocularly. This confirms MARIE's observations with the Paris strain (1,255th passage), and contrasts with PUNTONI's statement that the Rome Fixed Virus (1,850th passage) had lost its virulence when administered both subcutaneously and intraocularly, though it remained active when given intradurally or intracerebrally.

REMLINGER and BAILLY[15] have studied the action of mixtures of rabies and herpes viruses They find that there is no evidence of antagonism. The course of events depends upon the relative susceptibility of animals, so treated, to the two diseases, and upon the relative durations of the two incubation periods.

Following up a previous line of experiment, in which GOODPASTURE[16] noted that, when the virus of herpes simplex is inoculated into the right masseter muscle, the first resulting cerebral lesion is located in the corresponding 5th motor nucleus, this author has now carried out similar experiments with rabies virus. After intra-masseter inoculations, symptoms were first observed in the anterior extremities, the earlier being in the limb of the side inoculated ; also " lyssa bodies " (or very minute Negri bodies) were present in excess in the ganglion cells of the 5th motor nuclei Negri bodies proper were, however, found over a large area. GOODPASTURE distinguishes " lyssa bodies " which contain no " Innenkorper," from the larger forms in which internal structure is seen. He believes that the Negri body proper is formed within the living cell by a focal degeneration of neurofibrillar substance, which coheres about one or more of the structures which result from mitochondrial degeneration The inclusion of these living bodies gives rise to the characteristic architecture of the Negri body, which alone serves to distinguish them from " lyssa bodies." He believes that all the changes observed are degenerative in origin. Illustrations are given to support these views.

QUAST[17] discusses the case of a treated patient who died of tubercular meningitis some three weeks after being bitten. Four rabbits were inoculated with emulsions of the patient's hippocampus, and all died of fixed virus rabies (showing first symptoms about the 5th day). With the object of determining whether this was a constant condition of the brain of treated patients, or whether the concomitant disease had given rise to a *locus minoris resistentiae,* he treated three dogs in the ordinary way, and killed them on, or a couple of days after, the completion of treatment Successful transmission to the 3rd generation was attained if a thick emulsion of hippocampus was used for the transmitting dose Thus the fixed virus was present in comparatively small quantities The author concludes that fixed virus finds its way into the central nervous system and remains there in a latent condition for a considerable period of time (See also CORNWALL and BEER[10] *supra*)

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[14] PLANTUREUX (Edm) Pouvoir infectant du virus rabique fixe d'Alger inoculé dans la chambre antérieure de l'oeil et le tissu conjonctif sous-cutané de divers animaux —*C R Soc. Biol.* 1926 Feb 5. Vol 94. No 4. pp 247–249 [2 refs]

[15] REMLINGER (P) & BAILLY (J) Action des mélanges de virus rabique et herpétique —*C R Soc Biol.* 1925. Dec. 18. Vol. 93. No 37. pp. 1486–1488 [1 ref.]

[16] GOODPASTURE (Ernest W) A Study of Rabies, with Reference to a Neural Transmission of the Virus in Rabbits, and the Structure and Significance of Negri Bodies —*Amer. Jl Path.* 1925 Nov. Vol. 1. No 6. pp. 547–582. With 5 figs on 2 plates [31 refs.]

[17] QUAST (Gerhard) Ein Beitrag zur Frage des Verbleibes des durch die Wutschutz-Impfung dem menschlichen Körper einverleibten Virus fixe —*Cent f. Bakt.* I Abt. Orig. 1925. Dec. 12. Vol 97. No. 1. pp. 53–56. [4 refs.]

iii *Serum Immunity*

PHISALIX[18] has found that a virus serum mixture of approximately equal parts of fixed virus emulsion and the serum of the viper the adder, and the hedgehog (Herisson) protects rabbits against intraocular inoculation with fixed virus He[19] has also shown that the serum of the eel an animal which possesses a natural immunity against rabies, contains rabicidal substances Such a serum like the serum of the viper is rabicidal *in vitro* as also *in vivo*

SABLINE[20] cites a case in which symptoms of rabies appeared one month after the bite in spite of the fact that the serum was experimentally shown to contain a considerable quantity of antibodies This suggests according to the author that the immunity of rabies may be independent of antibody formation, that is to say it may be a local immunity of the Besredka type

MIROLUBOVA[21] has found that antibodies are developed more quickly in fat than in lean persons and that they are no longer demonstrable after 60 days

HOROWITZ WLASSOWA[22] using complement deviation as an index to prevalence of antibodies finds that the sera of rabbits immunized with the salivary glands of rabid dogs develop antibodies against the virus but not against brain substance whereas if the immunizing agent be fixed virus complement deviation is obtained with fixed or street virus and also with normal brain substance For diagnostic purposes if the brain substance of a suspected animal is available it should be tested against the sera of rabbits immunized with rabid salivary glands and conversely if the salivary gland is to be tested it can be tested against the sera of rabbits immunized with fixed virus

iv *Diagnosis*

Attention is drawn by BORMAN[23] to the difficulty of differentiating red blood cells from Negri bodies in tissues stained by the usual methods. He has found that these red blood cells may be dissolved out of smear preparations by the action of glacial acetic acid The smears should be as thin as possible They are placed directly in a solution containing 98 cc of methyl alcohol (C P) and 2 cc of glacial acetic acid for three minutes dried carefully over a flame transferred to a 10 per cent aqueous solution of potassium carbonate for five minutes washed gently, and dried with blotting paper Any staining method for Negri bodies may then be applied , the author himself employs the usual methylene blue (aqueous saturated solution), 3 drops, basic fuchsin (saturated alcoholic solution), 2 drops, tap water 20 cc

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[18] PHISALIX Vaccination du lapin contre l inoculation intracérebrale de virus rabique fixe par inoculation sous cutanee des melanges virus sérum de Vipère de Couleuvre ou de Hérisson avec exces de virus —*C R Acad Sci* 1926 Feb 15 Vol 182 No 7 pp 499–501

[19] PHISALIX Immunite naturelle de l Anguille vis à vis du virus rabique et action rabicide de son sérum —*C R Acad Sci* 1926 Jan 11 Vol 182 No 2 pp 182–184

[20] SABLINE (D W) [De la nature de l immunite dans la rage]—*Jl de Microbiol de Path et de Maladies infectieuses* 1925 Vol 2 No 4 p 16 [In Russian] [Summarized in *Bull Inst Pasteur* 1926 May 31 Vol 24 No 10 pp 455–456]

[21] MIROLUBOVA (E J) [Du pouvoir rabicide des serums consécutifs au traitement pastorien] —*Jl de Microbiol de Path et de Maladies infectieuses* 1925 Vol 2 No 4 p 23 [In Russian] [Summarized in *Bull Inst Pasteur* 1926 May 31 Vol 24 No 10 p 456]

[22] HOROWITZ WLASSOWA (L) Ueber die Komplementablenkungsreaktion bei der Tollwut —*Cent f Bakt* I Abt Orig 1926 Apr 1 Vol 98 No 3/4 pp 216–227

[23] BORMAN (Earle K) Eliminating a Source of Error in the Laboratory Diagnosis of Rabies —*Amer Jl Public Health* 1926 May Vol 16 No 5 pp 467–468

The sections are warmed slightly and the stain is allowed to operate for not more than one minute then washed and dried The staining solution deteriorates rapidly If the large nerve cells are clear blue, and the matrix a dull red, it is an indication of excessive treatment with the acid fixative or of insufficient treatment with the carbonate solution A properly prepared specimen should show the large nerve cells with reddish blue cytoplasm, and deep blue nuclei in a matrix of brilliant red Negri bodies are strawberry red and show their typical structure

PINZANI[24] recommends the following method

1 Sections 5–7μ cut in paraffin and fixed to the slide by Meyer's albumen abs alc iodized alcohol (2 to 3 drops of iodine in 5 cc alc), till yellow to remove traces of sublimate from the fixing solution, and also as a mordant

2 Wash in water

3 Stain for 5 minutes in hot Ziehl s fuchsin

4 Wash in water

5 Immerse in a solution of sulphite of soda (10 per cent aqueous solution freshly prepared), until sections assume a rose colour It is not possible to fix a limit to the time required, as this depends upon the fixative used A very short time is required for specimens fixed in alcohol, a much longer period (1 to 2 minutes) if fixed in sublimate or Zenker

6 Wash in water

7 Counter stain in aqueous methylene blue (1 in 4,000), for 30 seconds

8 Wash in water

9 Differentiate in alcohol 30 and 60 per cent

10 Abs alc xylol balsam

Negri bodies are coloured rose brown and show their characteristic structure Nuclei of nerve cells are coloured violet

The best appearances are found after fixation with Zenker or Schaudinn's fluid, or in Neri's solution (2 parts of saturated aqueous solution of sublimate to 1 of absolute alcohol) , results after fixation in alcohol are less satisfactory For fixation the author recommends the following methods —

1 Zenker's solution for six hours , wash in running water for three hours weak alcohol three hours absolute alcohol nine hours (changing 3 times) xylol two and a half hours (changing 3 times), paraffin two and a half hours Total twenty-six hours

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[24] PINZANI (Gino) Diagnosi microscopica della rabbia —*Policlinico* Sez Prat 1925 Dec 14 Vol 32 No 50 pp 1748–1750

2 Schaudinn's fluid for 4–6 hours weak alcohol 3 hours absolute alcohol, xylol and paraffin as in (1) Total 23 hours

STUART and KRIKORIAN[25] after fixation in Zenker, stain their sections by the following method —

1 Haematoxylin 7 to 10 minutes
2 Blue ' well in tap water
3 Counter stain in acid fuchsin 3 minutes
4 Differentiate in tap water
5 Pass rapidly through alcohol, oil of cloves to balsam

v *Methods of Immunization and Statistics*

ALIVISATOS[8] contributes further information regarding the ether method The street virus of Serbia is a strong one, which gives a relatively short incubation period in man (13, 16, 10, and 17 days have been observed) not only in the case of wolf bites but also after dog bites Thus a more rapid method than that of Hogyes was imperative [See also above with reference to paralytic accidents]

Various simplifications of procedure are proposed by v D HOVEN v GENDEREN[26] The brain substance is emulsified by shaking in a closed vessel containing glass beads Monkeys are used in place of rabbits for vaccinal material These are infected with fixed virus subpassaged in the usual way through rabbits The vehicle used for emulsification is glycerine She found, *inter alia* that fixed virus emulsified in glycerine (Schering) diluted with 25 per cent of normal saline, maintains its virulence for more than a year at temperatures of minus 10 and 15 degrees Celsius The following table shows the results of the various modifications of treatment which have been employed at Bandoeng (Java) since the inception of the institute —

Method	*Patients*	*Total deaths*	*Failures*
Dried cord	816	19 (2·33%)	10 (1·22%)
Dried intensive	1 490	37 (2·48%)	16 (1·08%)
Hogyes	1 231	32 (2·6%)	13 (1·05%)
Hogyes intensive	2 799	37 (1·32%)	6 (0·21%)
Hogyes using monkey's brain	1 311	14 (1·06%)	0
Hogyes using monkey's brain (emulsified in glycerine) .	599	2 (0·33%)	0

The occurrence of paralytic accidents at this institute has already been referred to

BOTAFOGO GONSALVES[27] has found that fixed virus does not deteriorate appreciably during a period of three months when kept in carbolized olive oil (0·5 per cent phenol), whereas attenuation is observed if the concentration of phenol is 2 per cent He finds that suspensions in oil are not so virulent as suspensions in saline, and considers that this is due to interference with absorption by the nerve terminals He concludes that the use of oil as a vehicle brings about a gradual and continuous exhibition of the immunizing dose, and hence that larger and less frequent dosage may be employed. He advises that all laboratories should adopt the method.

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[25] STUART (G) & KRIKORIAN (K S) Anti Rabic Procedure in Palestine with Special Reference to Decentralization of Treatment —*Ann Trop Med & Parasit* 1925 Dec 16 Vol 19 No 4 pp 391–418 [10 refs]

[26] VAN DEN HOVEN VAN GENDEREN (Jeanne) Rabies Department, Technique of the Antirabic Treatment and its Result at the Pasteur Institute — *Meded Dienst d Volksgezondheid Nederl Indie* 1926 Pt 2 pp 115–130 With 1 plate

[27] BOTAFOGO GONSALVES (N) Lipovaccination antirabique Action de l huile pheniquée sur le virus rabique —*C R Soc Biol* 1926 Jan 22 Vol 94 No 2 pp 167–168 [1 ref]

Gloster and Taylor[28] from an extended series of experiments conclude that carbolized vaccines may be kept equally at 0° C. and at room temperatures of approximately 30° C. without loss of immunizing properties. Stevenson, King, Nicholas and Lahiri[29] similarly announce results which show that temperatures of 37° C. for 3 days have no appreciable deleterious effect. These experiments were undertaken with the object of determining whether, under the climatic conditions of India carbolised vaccine could be dispatched from central institutes for treatment at local centres.

From the Pasteur Institute at Kasauli (India) where the Indian carbolized vaccine is employed, King[30] reports 61 deaths (0·78 per cent.) and 34 failures (0·43 per cent.) amongst 7,852 persons treated. The rates according to position of bite are as follows: Leg 0·31, trunk 0·69, arm 0·58, face 5·06, multiple (excluding face) 2·33, multiple face 5·08. Seventeen per cent. of the total number, 7,852, were bitten by jackals, and 40 per cent. of the total deaths were due to jackal bites. An examination of figures from 1910 to date shows that amongst 4,000 persons treated for licks no deaths occurred. A remarkable case is reported in which a jackal bit a large number of people. Of these 81 came for treatment (75 arrived within 4 days after they had been bitten). Seven succumbed from rabies all more than 15 days after completion of treatment, a failure rate of 8·6 per cent.

From Lyons Rochaix[31] reports no deaths amongst 315 persons treated and from Paris Viala[32] had no deaths amongst 782.

vi. *Canine Rabies and its Control.*

A large number of experiments, which are too elaborate to cite in detail, dealing with the immunizing properties of single doses of vaccine are reported by various authors. Schlingman[33] has investigated the effects of a modification of treatment based upon the methods of Kondo and Semple, in which the vaccinal material consists of brain and cord substance of dogs which had been infected with fixed virus, emulsified in carbol saline, incubated at 37° C. and thereafter refrigerated for a length of time, sufficient to render the vaccine innocuous as tested by subdural injection He found that a single dose of 5 cc of this vaccine protected dogs against relatively large doses of fixed virus given intracranially

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[28] Gloster (T. H.) & Taylor (J.) assisted by Menon (K. N.) The Keeping Properties of Carbolized Anti Rabic Virus.—*Indian Jl. Med. Res.* 1926. Apr. Vol. 13. No. 4. pp. 835–852.

[29] Stevenson (W. D. H.), King (H. H.), Nicholas (M. J.) & Lahiri (B. N.) The Effect of Heat on Rabies Vaccine. Part I.—*Indian Jl. Med. Res.* 1926. Apr. Vol. 13. No. 4. pp. 879–884.
King (H. H.), Nicholas (M. J.) & Lahiri (B. N.) The Effect of Heat on Rabies Vaccine. Part II.—*Ibid.* pp. 885–893.

[30] Kasauli. Pasteur Institute of India. The Twenty Fourth Annual Report of the Central Committee of the Association and the Audited Accounts up to June 30th 1925 also the Report of the Director of the Institute for the Year ending 31st December 1924. [Stevenson (W. D. H.)]—pp. xvii+30. Simla: The Simla Times Press.

[31] Rochaix (A.) Le traitement antirabique dans la région Lyonnaise en 1924.—*Jl. Physiol. et Path. Générale.* 1926. Jan. Vol. 24. No. 1. pp. 86–88.

[32] Viala (Jules). Les vaccinations antirabiques à l'Institut Pasteur en 1925.—*Ann. Inst. Pasteur.* 1926. May. Vol. 40. No. 5. pp. 450–453.

[33] Schlingman (A. S.) Prophylactic Immunization of Dogs against Rabies by a Single Injection of a Dead Virus Vaccine.—*Jl. Amer. Med. Assoc.* 1925. Dec. Vol. 68. New Ser. Vol. 21. No. 3. pp. 299–305. [15 refs.]

MIESSNER and BAARS[34] contrast the immunizing properties of various strains of fixed virus of the Japanese vaccine and of Lyssin (F V suspension quickly dried for 24 hours in a Faust-Heim drying chamber at 30 C) The total number of animals employed for these tests was 98 The results showed that the subcutaneous route of inoculation was preferable to the intra-abdominal that a dose of one gram of nerve substance should not be exceeded and that favourable results were obtained by all methods They consider that Lyssin is a suitable and satisfactory vaccine It remains fully virulent for at least 60 days after desiccation

PLANTUREUX[35] performed experiments on rabbits with lipo-vaccine, dextrinized vaccine and phenolized horse serum vaccine and states that the latter vaccine when administered in 3 doses gave successful results

VELU BIGOT and EYRAUD[36] tested UMENO and DOI s vaccine given in 3 doses of 2 cc each and found that the immunity developed was of short duration and therefore insufficient Papers of a more or less general character by SCHERN [37] VELU [38] MOORE [39] BOYD [40] SCHLEGEL[41] and LANFRANCHI[42] are mainly of local interest

A considerable increase of canine rabies is reported from New York City [43] The number of persons bitten by dogs has doubled itself during the last 5 years whilst the number of rabid dogs has increased from 44 in 1920 to 76 in 1926 Muzzling is to be introduced

vi *Miscellaneous*

For intracranial inoculation of rabbits REMLINGER[44] finds that in place of trephining a suitable perforation may be made by a simple instrument such as a shoemaker s awl

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[34] MIESSNER (H) & BAARS (G) Immunisierungsversuche gegen Tollwut an Hunden —*Cent f Bakt* I Abt Orig 1926 Vol 97 No 4/7 pp 55–61

[35] PLANTUREUX (Edmond) Contribution à l étude du traitement préventif de la rage chez les animaux *Ann Inst Pasteur* 1926 Feb Vol 40 No 2 pp 141 151 [12 refs]

[36] VELU (H) BIGOT (A) & EYRAUD (R) Essai de vaccination préventive contre la rage par intervention unique —*C R Soc Biol* 1926 Apr 23 Vol 94 No 13 pp 967–968

[37] SCHERN (Kurt) Ueber Tollwutimmunisierung und die Notwendigkeit der obligatorischen Impfung aller im Verkehrsleben befindlichen Hunde —*Seuchenbekampfung* 1926 Vol 3 No 1 pp 46–50 [4 refs]

[38] VELU (H) La prophylaxie de la rage d après les conceptions modernes Comment on pourrait la réaliser au Maroc —*Maroc Médical* 1925 Mar 15 No 39 4 pp [2 refs]

[39] MOORE (John) Rabies in Animals — *Vet Jl* 1926 Jan Vol 82 No 1 pp 5–8

[40] BOYD (J E M) Some Notes on Canine Rabies —*Jl Roy Army Med Corps* 1926 Jan Vol 46 No 1 pp 23–31

[41] SCHLEGEL (M) Zur Kenntnis der Tollwut —*Berlin Tierarzt Woch* 1926 May 14 Vol 42 No 20 pp 329–334 With 4 text figs [13 refs]

[42] LANFRANCHI (Alessandro) Le vaccinazioni anti rabiche —*Mod Zooiatro* 1926 May 1 Year 15 Ser 5 No 18 pp 403–407

[43] PUBLIC HEALTH REPORTS 1926 Feb 26 Vol 41 No 9 p 384 — Rabies and Dog Bites in New York City 1921 to 1925

[44] REMLINGER (P) Au sujet de la vaccination contre la rage procédes rapides d inoculation des lapins de passage —*Ann Inst Pasteur* 1926 Feb Vol 40 No 2 pp 167–168

KAWATANI[45] suggests that wounds should be washed with a solution of "Laimsol" (1 in 30), or of lactic acid (1 in 10), or of glacial acetic acid (1 in 10). He has found that if the eyes are washed within six hours after intracorneal injection with 100 cc. of any one of these solutions for a period of 2 minutes, with a velocity of flow of 4 metres per minute, infection is prevented.

A historical account of treatment of rabies in 1766 by means of mercury is related in the *Journal de Medecine de Bordeaux*.[46] A resumé of FERMI's monograph contrasting the various methods of antirabic treatment which was previously referred to in these reviews (this *Bulletin* Vol. 22, p. 242) is published in *Seuchenbekampfung*.[47]

MALONE[48] in a general article states that rabies was probably first introduced into Canada in 1810. In the year 1904 many cases were imported from New York State. The disease spread to Ontario, Manitoba, Saskatchewan, Alberta and British Columbia. Quebec remained free until the beginning of this year when an outbreak occurred in Gatineau.

From a study of the symptomatology, microscopical appearances, and experimental transmission to animals LAIGRET[49] concludes that the disease "*chiens fous*" of West Africa is identical with rabies.

KNACK[50] considers that the human organism is not indifferent to antirabic treatment, although marked disturbances only occur in rare cases. He consequently does not advise further decentralisation of treatment. 175 cases under treatment were examined with respect to general condition, body weight, temperature, blood pressure, urine, the Wassermann reaction, and blood characters.

A. G. McKendrick.

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[45] KAWATANI (Saneto). [Experimental Studies on the Prophylactic Treatment of Hydrophobia.]—*Saikingaku Zasshi* (*Jl. of Bact.*). 1925. Apr. No. 350. [Summarized in *Japan Med. World*. 1925. Nov. 15. Vol. 5. No. 11. p. 323.]

[46] JOURNAL DE MÉDECINE DE BORDEAUX. 1926. Jan. 25. Vol. 103. No. 2. pp. 60–61. Le traitement de la rage dans le Sarladais en 1766.

[47] FERMI (Claudio). Die Lyssaschutzimpfungsmethode nach Fermi verglichen mit allen derzeit verwendeten Hundswut-Schutzimpfverfahren.—*Seuchenbekampfung*. 1926. Vol. 3. No. 2. pp. 114–130. 1 [ref.]

[48] MALONE (R. H.). Rabies.—*Canadian Med. Assoc. Jl*. 1926. Mar. Vol. 16. No. 3. pp. 288–292.

[49] LAIGRET. La rage en Afrique equatoriale française.—*Ann. de Méd. et de Pharm. Colon.* 1926. Jan.-Feb.-Mar. Vol. 24. No. 1. pp. 77–82. [11 refs.]

[50] KNACK (A. V.). Klinischer Beitrag zur Tollwutschutzimpfung und Bericht ueber einen Fall von atypischer Lyssa.—*Ztschr. f. Hyg. u. Infektionskr.* 1926. Mar. 18. Vol. 106. No. 1. pp. 36–49. [13 refs.]

MEDICAL ZOOLOGY.

SCHILLING (Claus) Die Uebertragung parasitischer Protisten durch Parasiten hoherer Ordnung **[The Transmission of Microparasites by Parasites of Higher Grade.]**—*Beihefte z Arch f Schiffs- u Trop - Hyg* 1925 Vol 29 No 1 pp 312–316

This is a brief fragmentary discourse on the subject of the transmission of microparasites by parasites of higher grade After a brief recital of an historic sort, attention is drawn to some well-recognized lacunae, the author regretting that since his countrymen have no laboratories of their own in the tropics they must " spin hypotheses at home " His speculations on the subject of kala azar transmission which fill about three-quarters of a page, are put out of countenance by the sagacious observations reported last year from Calcutta In his historic introduction the author states, quoting ROSS as his authority, that the idea that blood-parasites of man are transmitted by ectoparasites of man originated in 1877 with [Joseph] BANCROFT, and as this error is the opening statement of an article having a didactic purpose and included in a " Festschrift " it is imperative to expose it

The reviewer has spared no pains in his endeavour to comprehend this extraordinary statement, which he concludes must rest upon a supposition that Joseph BANCROFT might have furnished MANSON with the idea of investigating the mosquito as the possible " nurse " of *Filaria bancrofti* The reviewer, however, cannot discover that Joseph BANCROFT ever had any communication with MANSON, or, indeed, ever published any observations at all on the subject of the transmission of the Filaria named after him Such observations as Joseph BANCROFT made on this subject appear to have been communicated by him first to Dr W ROBERTS, the eminent specialist on urinary diseases, and afterwards to Dr Spencer COBBOLD Dr ROBERTS, who refers to BANCROFT as " my old pupil " gave the following account of BANCROFT'S views in his well-known *Treatise on Urinary and Renal Diseases* (p 656 of 4th edition) —

> ' Dr Bancroft of Brisbane discovered filariae in the blood of persons suffering from chylous urine in Queensland Australia He kindly sent me some specimens preserved in glycerine and water enclosed in hermetically sealed tubes I had no difficulty in identifying these with the filariae described by Lewis Dr Bancroft infers from his experience that the disease is not communicated from person to person in the same family but thinks that it may be communicated by drinking contaminated water The filariae found by Dr Bancroft were also submitted for examination to Dr Cobbold "

Different statements of BANCROFT'S views made by COBBOLD (who seems to have acted as a sort of publicity agent both to BANCROFT and to MANSON) are incongruous both with the statement made by ROBERTS and one with another But in COBBOLD'S long paper on *The Life-history of Filaria bancrofti*, read before the Linnean Society on the 7th March, 1878 (and published in the Society's Zoology *Journal* for 1879, Vol xiv, p. 356)—a paper which professes to be " the nearest approximation to a correct chronological record " that the author can give of the various links in the discovery of this life-history—the entire " fame " of the " remarkable discovery of the intermediate host " is assigned to MANSON, and in the concomitant account of BANCROFT'S contributions no mention whatever is made of the existence of any anticipatory suspicions by BANCROFT.

A. Alcock.

GALEATI (Agostino). Portatori di protozoi e di elminti. [**Protozoal and Helminth Carriers.**]—*Arch. Ital. Sci. Med. Colon.* Tripoli. 1925. Nov.–Dec. Vol. 6. No. 11–12. pp. 167–170. [8 refs.]

The author examined the faeces of 125 persons in Italy, 60 men and 65 women, free from any intestinal disturbance, to ascertain whether they were harbouring protozoal or helminthic parasites. He found *E. histolytica* in three of the men, none in the women, *E. coli* in nine men and five women; *Trichomonas intestinalis* in four men and two women; *Giardia intestinalis* in two men and one woman. Ova of *Trichuris trichiura* were present in six men and fourteen women (16 per cent.), *Ascaris lumbricoides* in two men and three women, and *Taenia solium* in one man.

H. Harold Scott.

COLAS-BELCOUR (J.) & LWOFF (André). L'utilisation des glucides par quelques protozoaires. [**The Utilization of Sugars by Protozoa.**]—*C. R. Soc. Biol.* 1925. Dec. 11. Vol. 93. No. 36. pp. 1421–1422. [3 refs.]

The authors remark on the paucity of exact observations on this subject. They note those of KUDICKE & EVERS, that the survival of *Trypanosoma brucei* in culture was prolonged by the addition of particular glucides—glucose, levulose, mannose, and glycerine—to the bouillon medium; and those of several other workers on the beneficial effect of glucose upon the culture of divers Haematozoa. Their own experiments have been to compare the capacity of a free living protozoon—the Ciliate Infusorian, *Glaucoma piriformis*—with that of three parasitic protozoa—*Leptomonas ctenocephali*, and *Leishmania tropica* and *donovani*—in their power of utilizing various glucides, and, without permitting themselves to generalize beyond the isolated facts, they find that the free species has a wider range than the parasitic species.

A. A.

i. SERGENT (Et. & Edm.) & CATANEI (A.). Etude expérimentale du paludisme des oiseaux (*Plasmodium relictum*). Suite des essais de traitement préventif ou curatif par des produits autres que la quinine: cinchonine (XXX^{e} note). Action de la cinchonine sur le plasmodium pendant la période aiguë. [**Experimental Study of Bird Malaria. Treatment by Cinchonine and Stovarsol.**]—*Arch. Inst. Pasteur d'Algérie.* 1925. June. Vol. 3. No. 2. pp. 122–123. [1 ref.]

ii. —— & ——. Suite des essais de traitement par des produits autres que la quinine: le stovarsol (XXXI^{e} note).—*Ibid.* pp. 124–126. [1 ref.]

i. In 32 out of 36 experiments on canaries infected with *Plasmodium relictum* large amounts of cinchonine, in divided doses, rapidly and strikingly reduced the number of parasites in the peripheral blood (in 25 cases in twenty-four hours, in 7 cases in forty-eight hours). In the controls the parasites remained numerous for 8 to 15 days, and 6 of the 14 controls died.

ii. In 7 experiments on canaries stovarsol given in sublethal doses had no effect on the parasites (*Plasmodium relictum*).

A. A.

CATANEI (A.). Etude expérimentale de l'association de la spirochétose et du paludisme des oiseaux. **[Experimental Study of the Association of Spirochetosis and Malaria in Birds.]**—*Arch. Inst. Pasteur d'Algérie.* 1925. June. Vol. 3. No. 2. pp. 111–121. With 2 text figs. [6 refs.]

Experimental infection of canaries with *Spirochaeta gallinarum* and *Plasmodium relictum.*

In a pure infection with *S. gallinarum* spirochaetes appear in the peripheral blood after 2 days and disappear in 3 or 4 days, and thereafter lasting immunity is established. Prior injection of an emulsion of a Culex fed on blood rich in spirochaetes did not protect a bird from infection. Spirochaetosis induced during the incubation or the acute stages of a Plasmodium infection aggravated both infections. Birds recovered from spirochaetosis respond in the usual way to a subsequent infection with *Plasmodium relictum.* Spirochaetosis induced during the chronic stage of a Plasmodium infection develops normally and also almost always provokes a Plasmodium relapse, which may be mortal Specific reinoculation of birds " premunised " to *P. relictum* causes an acute development of the infection if the Plasmodium and the spirochaete are injected simultaneously.

A. A.

DOBELL (Clifford). **On the Species of** *Isospora* **parasitic in Man.**—*Parasitology.* 1926. Jan. Vol. 18. No. 1. pp. 74–85. [5 refs.]

[*Inter arma silent leges.*] The conclusions expressed in this controversial paper are that " (1) there is as yet no good evidence to prove that more than one species of Isospora occurs in man ; (2) there are no sound reasons for changing the name of this species from *I. hominis* (Rivolta) Dobell, 1919, to *I. belli* Wenyon, 1923 ; (3) and consequently the name *I. belli* Wenyon should, for the present, be regarded as a synonym of *I. hominis* (Rivolta)." [In the event of experts coming to a unanimous conclusion of this business the medical profession will be guided in accordance.]

A. A.

LEGER (André). Un cas de coccidiose intestinale humaine à *Isospora belli* à Hué (Annam). **[Case of Intestinal Coccidiosis in Man at Hué.]**—*Bull. Soc. Path. Exot.* 1926. Feb. 10. Vol. 19. No. 2. pp. 95–96.

In recording this case the author states that it is the only one out of 12,000 stool-examinations made at Hué during three years ending 1924 in which cysts of Coccidia were found. The patient in this unique case was an Annamite boy, rather thin, and exhibiting dysenteriform symptoms (said to have persisted for more than 3 months). Many oocysts of *Isospora belli* of Wenyon were found in his stools along with eggs of ascaris and trichocephalus and Charcot-Leyden crystals, but no amoebae or cysts. After treatment with santonine and calomel and a course of emetine injections the oocysts disappeared from the stools.

A. A.

THOMSON (John Gordon) & ROBERTSON (Andrew). **Fish as the Source of Certain Coccidia recently described as Intestinal Parasites of Man.**—*Brit. Med. Jl.* 1926. Feb. 13. pp. 282–283. With 2 text figs. [8 refs.]

In this interesting paper we learn with some relief that certain coccidia recently added to the horrible list of hominid parasites (one cannot use the beautiful term "human" in confederacy with an intestinal parasite) are merely common parasites of common food-fishes, of the indigestible spores of which man purges himself in the course of nature.

How many species of coccidia the medical man may, furthermore, relieve his mind of cannot be stated with certainty until experts, who appear rather to have forced the things upon the profession, are agreed upon certain delicate questions of specific definement. Their *names*, however, are five, namely *Eimeria sardinae* Thélohan, very common and often found in enormous numbers in the milt of herrings (including sprats); *E. clupearum* Thélohan, found in the liver of herring, sprat, and mackerel, *E. oxyspora* Dobell, which the authors consider to be identical with *E. sardinae*; *E. wenyoni* Dobell, considered identical with *E. clupearum*; and *E. snijdersi* Dobell, regarded as a degenerate or altered form of *E. sardinae.*

The authors refer regretfully to a certain pride of knowledge which zoologists display towards medical men. The reviewer has no personal experience of this treatment, which certainly did not exist in HUXLEY's day. HUXLEY, however, was a medical man himself and would have known that there is not one zoologist in a hundred or more who starts working, either on general zoology or an any particular group of animals, with such a thorough grounding in the anatomy (including histology), physiology, and pathological anatomy of any particular animal type as the medical student has to undergo in his study of the human type. It is to be hoped that the authors are mistaken in their opinion that zoologists have taken up a superior attitude to our profession, both on sentimental and on practical grounds—both because of the time-honoured academic association of Zoology and Medicine, and because—as the recent history of tropical medicine has so beautifully illustrated—the science of medicine has its roots and its living growth in biology.

A. A.

WENYON (C. M.). **Coccidia of Fish in Human Faeces.** [Correspondence.]—*Brit. Med. Jl.* 1926. Feb. 20. p. 347.

Wenyon remarks, with reference to the paper by THOMSON and ROBERTSON on the origin of the oöcysts of certain coccidia found in human faeces, that he has for some time been of opinion that *Eimeria* *wenyoni* and *E oxyspora* of Dobell were not parasites of man, but corresponded, as THOMSON & ROBERTSON have demonstrated, with *E clupearum* and *E sardinae* of Thélohan

A. A

THOMSON (J G) & ROBERTSON (Andrew) **Experimental Passage of the Oocysts of Fish Coccidia through the Human Intestine.**—*Brit Med Jl* 1926 Mar 6 pp 420–421 [2 refs]

Referring to their discovery that certain coccidia (oocysts) supposed to be parasites of man are really common parasites of common food-fishes and merely pass through man s gut as the indigestible residue of a meal consisting of infected fish the authors now relate a confirmatory experiment A good large meal of herring-milt infected with *Eimeria sardinae* was taken at 8 p m 2 hours after the bowel had been cleared by a strong saline purge No other food was taken until the following morning, when, at 10 o clock, a stool containing the oocysts was passed The next stool did not contain any oocysts, and the volunteer suffered no ill effects

The authors, who at first discovered fish infected with *E sardinae* in fishmongers' shops—in the milt of *all* the herrings purchased—have since found them (oocysts) in tinned sardines from Portugal and in tinned soft-roes of herrings from Norway

A A

LIBERT (Edmond) Le tubage duodénal Ses applications au diagnostic et au traitement Considérations sur la flore duodénale normale et pathologique [**The Normal and Pathological Duodenal Flora.**]—126 pp With 28 text figs 1924 Paris J B Baillière et fils

Attention is drawn to p 73 and pp 103–106 of this book upon the applications to diagnosis and treatment of a knowledge of the contents of the duodenal fluid obtained by tubage from the living body In the pages last cited the author states that the animal parasite oftenest found in this fluid is the living *Giardia intestinalis* , and he quotes other authors and emphasizes his own confirmation, to the effect that this parasite is practically restricted to the duodenum whilst it is alive In page 73 he states that in a case of amoebic hepatitis he observed the liquid drawn from the duodenum to be at first turbid and full of polynuclear leucocytes with some amoebae, and soon afterwards to become transparent of a golden-yellow colour, and full of giardias not seen in the turbid fluid first drawn

A A

CASTEX (M R) & GALÁN (J C) [**Giardiasis of Biliary Passages.**]—*Arch Arg de Enf del Ap Digestivo* Buenos Aires 1925 Oct Vol 1 p 30 [Summarized in *Jl Amer Med Assoc* 1926 Jan 9 Vol 86 No 2 p 157]

The summary states that in 11 cases the liver was enlarged in 63 per cent., general toxaemia existed in 81 8 per cent , constipation in 54 5 per cent , and digestive disturbances in 72 7 per cent , and that of all the drugs tried neo arsphenamin by the vein proved the most effective, even if it did not always extirpate the parasite

A. A.

ANDREWS (Justin M.). **Cultivation of Trichomonas, Thermal Death-Point, Anaerobic Conditions, Attempts at Sterilization.**—*Jl. Parasit.* 1926. Mar. Vol. 12. No. 3. pp. 148–157. [8 refs.]

In this paper known methods and media for cultivating Trichomonas are discussed. Five species "lived and multiplied under conditions which indicate that they are facultative anaerobes." The active forms of all the species studied were killed at a temperature of 49° C.

A. A.

GUPTA (Biraj Mohan Das). **On a Species of** *Trichomonas* **prevalent in Calcutta.**—*Indian Med. Gaz.* 1926. Jan. Vol. 61. No. 1. pp. 10–14. [19 refs.]

The experiments here recorded, showing that Pentatrichomonas, in rich cultures, given to kittens by the mouth, can pass through the stomach alive and settle in the caecum, appear to have been performed carefully and with all reasonable precautions. Bodo, on the other hand (a coprozoic species), is destroyed in the gut.

A. A.

TANABE (Misao). **The Cultivation of Trichomonads from Man, Rat and Owl.**—*Jl. Parasit.* 1925. Dec. Vol. 12. No. 2. pp. 101–104. [8 refs.]

The author gives the composition of a medium for cultivation of certain Trichomonads. On this medium, in a pH reaction of 8 to 8·2, and at a temperature of 35° C., they are said to multiply to a maximum by 48 hours, to be decreasing at 72 hours, and to become extinct in a week. The medium is said to be advantageous by discouraging growth of bacteria Its composition is as follows "NaCl, 0 7 gm.; sodium citrate, 1·0 gm.; Löffler's blood-serum (dehydrated), 0·5 gm ; white of egg, 2 cc ; distilled water, 100 cc" To be well shaken when adding the white of egg, and again when finally adding the blood-serum.

A. A.

HOLMES (Francis O) **The Relation of** *Herpetomonas elmassiani* **(Migone) to its Plant and Insect Hosts.**—*Biol. Bull* 1925. Nov. Vol. 49. No. 5. pp 323–337. With 5 text figs. [5 refs.]

—— **Non-Pathogenicity of the Milkweed Flagellate in Maryland.**—*Phytopathology.* 1925. May. Vol. 15. No 5. pp. 294–296. [5 refs.]

——. **Geographical Distribution of the Milkweed Flagellate,** *Herpetomonas elmassiani* **(Migone).**—*Ibid.* pp. 297–299. With 1 text fig.

Herpetomonas elmassiani appears to be widely prevalent in American milkweeds (*Asclepias syriaca,* and other species), inhabiting only the laticiferous vacuoles, but not the protoplasm of the cells of the latex system; it may be present in large numbers without doing any apparent harm to the plant. The bug *Oncopeltus fasciatus,* whose range coincides with that of the flagellate, is suspected of being the insect host, and a species of flagellate was found by the author in the salivary glands, but not in the intestine of that species of bug.

A. A.

PATANE (Carmelo) Un caso di flagellosi intestinale da *Bodo caudatus* (Prowazekia) osservato nell'uomo in Cirenaica Altri reperti locali dello stesso flagellato nella natura equale coprozoo—nell' intestino dell'uomo e di erbivori [**Case of Human Infestation by** *B caudatus* **in Cirenaica.**]—*Pathologica* 1925 Nov 15 Vol 17 No 408 pp 606–613 With 2 text figs [24 refs]

Upon the text of an Arab suffering from obstinate "dysenteriform enteritis" in whose faeces there was found Bodo along with *Entamoeba coli* and *Blastocystis hominis*, the author has here opened out an elaborate monograph on *Bodo caudatus*—its history synonomy, changing morphology, cultivation and diverse occurrence in Cyrenia—ending with a bibliography of 24 separate items The conclusion leads to the usual trivium—banal coprophile innocent commensal, possibly and occasionally and conditionally harmful and a parasite—which ?

A A

i HEGNER (Robert W) **Studies on Bird Malaria.**—*Southern Med Jl* 1926 May Vol 19 No 5 pp 377–381 [6 refs]

ii WULKER (G) Zur Kenntnis der Hamosporidien [**The Haemosporidia.**]—*Cent f Bakt* I Abt Orig 1926 Vol 97 No 4/7 pp 213–218 [13 refs]

iii YAKIMOFF (W L) Notes de parasitologie [**Parasitological Notes.**] —*Ann Soc Belge de Med Trop* 1926 Jan Vol 5 No 2 pp 127–135 With 13 text figs [9 refs]

iv TANABE (Misao) **Morphological Studies on Trichomonas.**—*Jl Parasit* 1926 Mar Vol 12 No 3 pp 120–130 With 41 figs on 2 plates [9 refs]

v PEREKROPOW (G I) Zur Frage ueber die Parasiten vom Typus Sergentella [**Parasites of Sergentella Type.**]—*Rev Microbiol et Epidemiol* 1925 Vol 4 No 4 German summary pp 137–138 [In Russian pp 49–51 With 2 text figs]

vi GUÉRIN (F) Infection par "*Nyctotherus africanus*" [**Infection by** *N africanus*]—*Ann Soc Belge de Med Trop* 1926 Jan Vol 5. No 2 p 119

i This is a pleasant résumé of work by the author BENHAREL BOYD, TALIAFERRO, and WHITMORE which has already been noticed

ii A retrospective summary not containing anything new

iii Notes and crude figures of ' new " flagellates observed in stools of man and mice, etc

iv Descriptions and figures of numerous species of Trichomonas, including new species from rabbit kangaroo, screech-owl grouse and stag-beetle (Passalus)

v Brief note on some small bodies here named *Sergentella jakimowi*, found in a 10 or 11 year old blood film from a patient who had suffered for about three years from headache irregular fever, anaemia, progressive debility, and an enlarged spleen and liver, supposed to be due to chronic malaria although malaria parasites were not discovered

vi A note of the finding in the stools of "*Nyctotherus africanus*" without any concomitant pathological symptoms or signs

A A

VAN SOMEREN (V G L) & DE BOER (H S) **Report on the Mosquito Breeding Areas within the Nairobi Municipal Area, with Special Reference to Waters containing Anopheline Larvae.**—*Kenya Med Jl* 1926 Jan Vol 2 No 10 pp 276–298 With 16 plates, 1 map & 2 charts [1 ref]

This report of a well-planned and carefully-performed survey will prove of great value, for although Nairobi has been reputed to be free from malaria the reputation is known to be undeserved. It is to be understood that so far as continuous and systematic observations go this report deals with breeding-places and the specific larvae found there. Altogether, 11 species of Anopheles and 42 species of Culicini —of which 21 are Culex—have come to light. The survey included all the land lying within the municipal bounds, and in one direction just beyond, the whole tract being mapped and divided into 18 areas of observation. Each area was visited regularly once a week throughout the year by native collectors, surprise supervisional visits being made at intervals. The individual areas are here described with the nature of the breeding-grounds and the species of Anopheline larvae found in each In the presentation of the results preference is given to the Anophelines, eleven plates of various types of breeding-places being shown and four plates of larvae. The 11 species of Anopheles found are *A. costalis, cinereus, christyi, mauritianus, pretoriensis, transvalensis, funestus, marshalli, maculipalpis, squamosus,* and *rhodesiensis.* The most abundant as well as the widest in range was *A. costalis,* the other species being spoken of as " somewhat scarce." Although no complete observations are recorded of the adults, a systematic notice was taken of those found in dwellings and outhouses in the well-populated neighbourhood of one particular area devoted to market-gardening and extensively irrigated. In this neighbourhood adults of 6 species were captured in the various buildings in one compound, 3 species—*costalis, cinereus,* and *christyi*—having been taken in every month of the year.

Of the Culicini occurring in Nairobi, *Stegomyia fasciata* and *Culex fatigans* may be noted

A. A.

SENIOR-WHITE (Ronald). **Physical Factors in Mosquito Ecology.**—*Bull Entom. Res.* 1926. Jan. Vol. 16. Pt. 3. pp. 187–248. With 8 figs. [56 refs.]

It is many years now since Malcolm WATSON suspected that it is something in the water itself rather than in its gross physiographical environment that determines its fitness as a breeding-medium for Anopheles, and thence hinted at the possibility of finding some means of controlling that insect simpler and less costly than drainage or than continual oiling. Later on LAMBORN took up the wondrous tale, and then MACGREGOR showed how Anopheles larvae could be wrecked by a change in the pH concentration of the water and by the homely operations of the *dhobi.* The present author has approached this fascinating subject with all the apparatus of exact measurement, and he gives us here the results of a year's continuous and laborious study of mosquito-breeding waters in Ceylon. In the course of hundreds of observations he has collected an enormous volume of most interesting detail, which, however, it is impossible to summarize, though the method and scope of his investigations may be noticed for the guidance of other workers.

The first set of facts to be determined, as regards both natural and artificial waters, was the exact extent of toleration, by the mosquito-larvae living in them, of pH concentration and of total dissolved solids, oxygen, and saline ammonia—the important factor of albuminoid ammonia not being included in the survey. Since these combined factors may be assumed to act more directly on the vegetable organisms upon which the larvae feed than upon the larvae themselves, another matter of great interest was to make—as was made—a comprehensive survey, with specific determinations, of the algae inhabiting the observed waters Then the various natural phenomena known or inferred to be detrimental to the life of larvae were observed and considered Finally, some typical bodies of water were kept under periodic observation for a year, so that the seasonal play of the factors under study might be watched, and the associations of particular species observed

The following are some of the main conclusions In Ceylon mosquito larvae in general are found only between pH 5·8 and 8·6, species living in moving water having a wider tolerance than those in standing water—the former into acidity, the latter into alkalinity—and anophelines a wider tolerance than culicines Natural-water-breeders are intolerant of any acidity not caused by CO_2 [The " total " solids in solution were measured in terms of electrical conductivity, and are so expressed, but the limits, even in natural waters, appear—as indeed they do to common observation—to be extensive, i e, from 62-922] Waters in which dissolved oxygen is low are not favoured by Anopheles, for instance *Anopheles listoni*, the only malaria-carrier commonly breeding in ricefields in Ceylon, was found to be dependent on a considerable amount of oxygen *Saline* ammonia in amounts of less than 1 per million in natural waters was found to be inhibitory, especially to anophelines A " feeding-association " of certain mosquitoes mainly anophelines, with certain algae was observed, in other words certain species are commonly found in association The author is to be congratulated upon a fine piece of work, but one may be permitted to point out that his proposal to regard as " biological races " those larvae of a given species which happen to be found outside the usually observed chemico-physical tolerance of that species takes him quite outside the canons of inductive logic

A A

BOREL (E) Note sur un procédé simple pour empêcher la ponte des moustiques dans les collections d'eaux familiales indigenes **[A Simple Way of preventing the Deposit of Mosquito Eggs in Domestic Water Collections.]**—*Bull Soc Path Exot* 1925 Dec 9 Vol 18 No 10 pp 779–781

The author relates that at Saigon he came upon an old lime-cask still completely encrusted with lime and part filled with rainwater, in which he could not find any mosquito larvae, though larvae of Stegomyia and Anopheles were to be seen in other kinds of water-vessels close by In water taken from the old lime-cask, however, larvae of *Aedes albopictus* and *argenteus* and *Anopheles vagus* lived happily in the laboratory, though the water had a pH tension of 9 3 and contained " 75 mgm of carbonate of lime " Struck by the paradox that it was the barrel and not the water that appeared to be obnoxious, the author set out together three glazed earthenware vessels, one thickly whitewashed all over inside and out, the other whitewashed in one half, and the third not whitewashed at all Rainwater soon collected in them, and though larvae of *Aedes albopictus* and two species of Culex appeared in due time in the other two vessels, no larvae appeared in the completely-whitewashed vessel Larvae, however, that were transferred to the completely-whitewashed vessel, lived and grew quite well in it. The obvious conclusion is that it was the uniform whiteness of the vessel that repelled the pregnant females, and this conclusion was confirmed by the fact that when in the course of two months the white vessel became discoloured by encrustations of algae pregnant mosquitoes laid their eggs on its water These observations undoubtedly appear to be of value for dealing with domestic mosquitoes

A A

MACGREGOR (Malcolm E) **Some Effects of Electric Current on Mosquito Development.**—*Bull Entom Res* 1926 Mar Vol 16 Pt 4. pp 315–317

Miscellaneous observations of some details of the behaviour of mosquito larvae in the course of some experiments upon altering the pH reaction of water by the passage of electric currents Larvae were killed by a current (roughly estimated) of 250 milliamperes at a voltage of 100, after five minutes but the vitality of eggs was not affected by a current at a pressure of 150 volts for several hours

A A

BARBER (M A) & HAYNE (T B) **Water Hyacinth and the Breeding of Anopheles.**—*Public Health Rep* 1925 Nov 20 Vol 40 No 47 pp 2557–2562 [5 refs]

Water Hyacinth (*Piaropus* [*Eichornia*] *crassipes*) of the Natural Order Pontederiaceae, is a native of South America which has spread northwards to Texas and Florida and eastwards all across the Oriental region, and also into Japan and Australia In some places it has become a pest, destroying navigation and fisheries and endangering bridges It has been said to harbour crustacea and small fishes that eat Anopheles larvae and on the other hand it has been said to interfere with the action of larvicides and larvivorous fishes Its influence, and its further spread, should therefore be watched

A A.

IYENGAR (M O T) **The Anopheline Fauna of a Swamp in Bangalore.** —*Indian Jl Med Res* 1926 Jan Vol 13 No 3 pp 697–702 With 8 figs on 3 plates & 1 sketch map [3 refs]

There are several points of general interest in this paper Larvae of *Anopheles karwari* and *maculipalpis* were found in large numbers in a mere film of seepage In *Anopheles funestus* var *listoni* and *A jeyporensis* the tail-hooks are very powerful, so that the larvae can anchor themselves to vegetation in a strong current Larvae of *A fowleri, fuliginosus, jamesi, barbirostris,* and "*hyrcanus*" were observed in profusion in pools where water-weed, among which Chara was predominant, formed dense mats near the surface The easy adaptability of *A stephensi* is noted, its larvae have been observed in domestic vessels, old tins, cisterns even of filtered water, wells in cellars where no sunlight enters, pools, streams, brackish water, and briny sea-water

A A.

CUBONI (E) Osservazioni sulla biologia dell' "*Anopheles superpictus*" e dell' "*Anopheles algeriensis*" e caratteri differenziali delle loro larve [**Observations on Biology of "*Anopheles superpictus*" and "*A algeriensis*", Differential Characters of their Larvae.**]—*Riv d Malariologia* Rome 1926 Jan–Feb Vol 5 No 1 pp 49-53 With 4 figs on 1 plate [3 refs] English summary pp 111–112

Although *A superpictus* has "domestic habits" its larvae are only found far away from habitations Although the larvae of *A. algeriensis* are abundant the adults are very rarely seen The observations refer to Calabria The differential characters of the larvae of the two species are tabulated and figured

A A

BOYD (Mark F) **A Note on the Rearing of Anopheline Larvae.**—*Bull Entom Res* 1926 Mar Vol 16 Pt 4 p 308

Some of us who have tried breeding Anopheles on a large scale in a big city have had to give it up your eggs may hatch in thousands and for a time your water may be covered with larvae in shoals but your larvae sooner or later stop growing and in the end you may get a score or so of undersize adults HAROLD (this *Bulletin* Vol 21, p 142) has shown one way to success on a large scale and LAMBORN in Malaya was always able to breed Anopheles by feeding the larvae on Eugloena, and now the present author describes how he reared *A crucians* and *quadrimaculatus* with great success The water was kept in slow circulation by siphons, and yeast was daily rubbed into its surface-layer as food, marble dust was kept in the pans to preserve the alkalinity of the water, the optimum water temperature for these two species was 70°–80° F If the water be not kept in circulation it must be changed every two or three days to avoid fouling by decomposing yeast

A A

BLACKLOCK (D B) & EVANS (A M) **Breeding Places of Anopheline Mosquitos in and around Freetown, Sierra Leone.**—*Ann Trop Med & Parasit* 1926 Feb 11 Vol 20 No 1 pp 59–84 With 1 map, 4 figs on 1 plate & 10 text figs [15 refs]

The particular interest of this valuable report is, of course, local It has, however, points of general interest apart from its main general aspect as a model of what a survey and a survey-report of this subject should be

Of the 8 species of Anopheles—*costalis, funestus rhodesiensis, smithii, marshalli* var *freetownensis, squamosus, theileri*—found breeding in or near Freetown, by far the most numerous, though its numbers appear to have been reduced by some recently established restrictions, is the dangerous *A costalis* Its breeding places were almost invariably well open to the sun, in the town places worthy of general notice were at the junction of lateral street-drains with a brook, pools in laterite street-drains, shallow pits dug in laterite, a concrete washing-tank, and canoes lying on the beach, its larvae were not found in tins, bottles, etc, nor in domestic pots, rot holes, or axils of leaves, but they were found in abundance in pools in a brook within a few yards of its union with the sea *A rhodesiensis*, though not numerous, has a wide range and notable powers of adaptation to a variety of breeding-grounds.

A A.

EVANS (A M) **Notes on Freetown Mosquitos, with Descriptions of New and Little-Known Species.**—*Ann Trop Med & Parasit* 1926 Feb 11 Vol 20 No 1 pp 97–108 With 1 plate & 3 text figs [8 refs]

The little-known species is *Anopheles smithii*, Theob, of which the wing-markings are variable in both sexes, although not identically variable in the two sexes The author confirms CHRISTOPHERS' opinion that the so-called *A* (*Feltinella*) *pallidopalpi* of THEOBALD is a synonym of this species

A A

ALESSANDRINI (G) Lo studio biologico della risaia [**The Biological Study of the Rice-Field.**]—*La Risicoltura e la Malaria nelle zone risicole d'Italia* Rome, Minist Interno e Economia Nazionale 1925 33 pp With 6 figs [Summarized in *Rev Applied Entom* 1926 Jan Vol 14 Ser B Pt 1 pp 15–16]

According to the summary, Alessandrini is of opinion that Anophelines in some non-malarious rice-growing districts in Italy are so much more vigorous than Anophelines from marshy tracts that they can resist infection and therefore cease to be carriers of malaria [No evidence of their power of resistance is given, and the presumption of their superior vigour appears to be based on certain features and circumstances of life of their larval stage] The larvae of the rice-fields are larger on the whole, fatter, and of tougher tissue, and they feed on algae rich in chlorophyll, whereas the marsh-larvae are enfeebled not only by bad and indigestible food (bacteria and protozoa) and by the poisonous decompositions that occur in marshes, but also—since marsh-water is poor in dissolved oxygen—by their constant journeys to the surface for air [The fact that Anopheles larvae usually rest at the surface and take in air chiefly from the atmosphere direct, appears to be unduly discounted]

It is mentioned that these vigorous ricefield larvae have a strong predilection for green algae, and are so green both in themselves and in their "phototropism" that Paris green has a most fatal attraction for them [This attraction is not superfluous, as it appears to be at first sight, since the vigorous adults that issue from these green larvae though ceasing to transmit malaria still cause annoyance by their bites]

A A

KÉRANDEL (J) Riziculture et distribution géographique du paludisme en Indochine Insectes prédateurs de larves de moustiques [**Rice Culture and Distribution of Malaria in Indo-China.**] —*Bull Soc Path Exot* 1925 Dec 9 Vol 18 No. 10 pp 815–821.

The author observes that in Indo-China malaria is peculiarly prevalent in the hilly tracts where the rice-fields are terraced and water continuously trickles from terrace to terrace , and that in the stagnant ricefields of the low country and big deltas, on the other hand, malaria is absent or relatively rare His explanation is that there are not only fishes but also carnivorous insects in the stagnant waters of the deltas, whereas in the trickling waters of the terraced ricefields there is no such fauna to prey upon the Anopheles larvae He admits the difficulty of interfering with the traditional native methods of cultivation

A A

SHINGAREV (N I) **[New Data on the Culicidae of U.S.S.R. (Russia).]**—*Russian Jl Trop Med* 1926 No 2 pp 47–48 [In Russian]

The paper is a preliminary report on the anopheline fauna of Russia Up to the present only eight species of the genus *Anopheles* have been recorded (*A maculipennis* Mg , *A elutus*, Edw , *A bifurcatus*, L , *A plumbeus*, Stph , *A hyrcanus*, Pall , *A hyrcanus* var *pseudopictus*, Grassi, *A superpictus*, Grassi, *A pulcherrimus*, Theo) To these the author adds the following, four of which are new *A aitkeni*, James (Caucasus), *A listoni* List (Turkestan) *A algeriensis*, Theo (Turkestan and N Caucasus), *A algeriensis* var *turkestani*, nov (Turkestan), *A hyrcanus* var *mesopotamiae*, Chr (Bokhara Turkestan), *A hyrcanus* var *marzinovski*, nov (Caucasus), *A superpictus* var *berestnevi*, nov (Turkestan), *A martinius*, n sp (Turkestan) The author promises a detailed description of the new forms in a paper entitled " A Revision of the Malarial Mosquitoes of U S S R "

C A Hoare

VAN THIEL (P H) Maxillenzahnzahl und Flugellange bei *Anopheles maculipennis* **[Number of Maxillary Teeth and Length of Wing in** *A maculipennis*]—*Beihefte z Arch f Schiffs u Trop Hyg* 1926 Vol 30 No 1 pp 67–75 With 2 charts in text [11 refs]

Comparing, with mathematical precision females of *Anopheles maculipennis* from different localities, the author finds evidence of local " populations " (? races) with differential characters expressed in correlation between length of wing and number of maxillary teeth—*e g* , the bigger females of Leiden have fewer maxillary teeth than the smaller females of Bolsward The morphological differences may possibly depend on salinity of the waters in which the larvae are bred The possibility of a connexion in Holland between malaria and salinity of water is suggested

A A

RODENWALDT (Ernst) **Entomological Annotations, III.**—*Meded v d. Dienst d Volksgezondheid in Nederl -Indië* 1926 Pt 1 pp 79–98. With 34 figs on 3 plates

Many facts point to *Anopheles rossi* as an important agent in spreading malaria in Celebes, where that species is very abundant *Anopheles* (*Myzomyia*) *parangensis* of Ludlow, a species common in Celebes, but of undetermined pathogenous import, is redescribed (adults and larva) and is figured *Anopheles* (*Myzomyia*) *ludlowi* var *sundaica* is described and figured in extraordinary detail A distribution-table of the Anopheles of Netherlands-India is given

A A

i. Langeron (M) Sexualité des larves de moustiques [**Sex of Larvae of Mosquitoes.**]—*Ann Parasit Humaine et Comparée* 1926 Apr 1 Vol 4 No 2 pp 126–135 With 8 text figs [4 refs]

ii Roubaud (F) & Colas-Belcour (J) La torpeur hivernale obligatoire et ses manifestations diverses chez nos moustiques indigènes [**Hibernation and its Several Manifestations in Mosquitoes of France.**]—*C R Acad Sci* 1926 Mar 29 Vol 182 No 13 pp 871–873 [3 refs]

Roubaud (E) Sur quelques phénomènes peu connus de la vie des moustiques [**Some Little-known Phenomena in the Life of Mosquitoes.**]—*Bull Soc Path Exot* 1926 Apr 14 Vol 19 No 4 pp 259–260 [1 ref]

iii Sergent (Et) Quelques parasites des culicides [**Parasites of Culicids.**]—*Arch Inst Pasteur d'Algerie* 1925 June Vol 3 No 2 pp 155–168 With 12 text figs [15 refs]

iv Nuñez Tovar (Manuel) Mosquitos y flebotomos de Venezuela [**Mosquitoes and Phlebotomi of Venezuela.**]—*Gac Med de Caracas* 1925 July 15, 31 & Aug 15 Vol 32 Nos 13, 14 & 15 pp 203–206, 214–223, 232–233.

v La Face (Lidia) Revisione degli Anofelini Italiani Nota I **Revision of Italian Anophelinae (Note I).**—*Riv di Malariologia* Rome 1926 Jan-Feb Vol 5 No 1 pp 44–48 With 9 figs on 2 plates [3 refs] English summary p 111

vi Faust (E C) **A Preliminary Check List of the Mosquitoes of the Sino-Japanese Areas.**—*China Med Jl* 1926 Feb Vol 40 No 2 pp 142–143

vii Ferguson (E W) **Mosquitoes of New South Wales.**—*Rep of Director-General of Pub Health New South Wales for Year 1924* pp 187–191

i The author draws attention to the easy visibility of the testes in Culicid larvae—first noticed by Mrs Helen Adie in 1912—as a pair of more or less piriform sacks—of a dark brown colour in Anopheles—lying mostly in the 6th abdominal segment He is of opinion that the determination of the sex of the larva is of practical value in seasonal control of Anopheles

ii These two papers deal with the same subject namely, the "asthenobiosis" or hibernation of mosquitoes [The senior author appears to overlook the great truth that *all* the vital phenomena that are so simple by familiarity are mysterious complexities]

iii Miscellaneous brief notes on various Protozoan parasites and a mite found in or on mosquitoes in larval and adult stages in Corsica Included among them are some descriptive remarks on and some figures of the sporozoites of *Plasmodium relictum* The numerous illustrations would be useful to anyone working at this subject

iv Of local interest A catalogue of the Culicidae and the species of Phlebotomus known to occur in Venezuela, it is descriptive so far as concerns 2 species of Anopheles and 35 species of Culicines not before recorded as occurring in Venezuela, and the five species of Phlebotomus

v The author agrees with Grassi that *Anopheles elutus* is a variety of *A claviger* [*maculipennis*] neither the absence of egg-floats nor the different number of hairs on the basal lobes of the male hypopygium are characters of specific constancy

vi This list has been compiled from the published records, and therefore is "fairly complete" for South China only The dangerous species in South China are said to be *A rossi*, *A sinensis*, and *A maculatus*

vii A list compiled from Edward's Synopsis of the mosquitoes of the Australasian Region

A A

AUSTEN (E E). **Concerning the Nomenclature and Synonymy of Certain Oriental and East African Bloodsucking Muscids (Diptera).**—*Bull. Entom Res* 1926. Mar. Vol 16. Pt. 4. p. 307.

The author points out that PATTON (*ante*, p 284) as a censor may be not less fallible than the entomologists who come under the censor's correction. *Haematobia nudinervis* of Stein has *not* priority of *Bdellolarynx sanguinolentus* of Austen, nor does the author accept PATTON's decision that Bdellolarynx and Haematobia are generically identical PATTON's recent discovery of the identity of Grunberg's genus " Glossinella " with Lyperosia was well established in 1909, although his conjectured identification of " *Glossinella* " *schillingsi* with *Lyperosia minuta* of Bezzi can be shown to be indefensible

A A.

SHORTT (H. E.), BARRAUD (P. J) & CRAIGHEAD (A. C.). **An Account of Methods employed in Feeding and Re-Feeding Sandflies,** *Phlebotomus argentipes*, **for the Second and Third Time, on Man and Animals.**—*Indian Jl Med. Res* 1926. Apr. Vol. 13. No 4. pp. 923–942. With 1 plate. [4 refs.]

The authors' earlier experience in Assam has been that the sandfly *Phlebotomus argentipes* died on the 4th or 5th day after being experimentally fed in the laboratory, owing to difficulties of parturition; and that since it could not be induced to feed a second time before parturition it appeared impossible to determine the question whether an individual experimentally infected with *Herpetomonas donovani* became infective by its bite.

In the present paper it is shown that the necessary survival of the fly can be secured in the natural breeding-season of this species when a suitable humidity is concurrent with a temperature ranging 1°–2° around 28° C. Under these conditions *P. argentipes* survives parturition in the laboratory and can be induced to feed (on mice, monkeys, and rabbits, as well as on man, cattle, and goats) a second or third time. Unfortunately, the " suitable humidity " cannot be exactly defined; it has to be settled by experience.

For obtaining a very heavy infection the second feed of the fly should be " on the same kala azar case as the first feed, or on an animal."

A. A.

ADLER (S.) & THEODOR (O.). **On the** *Minutus* **Group of the Genus** *Phlebotomus* **in Palestine.**—*Bull. Entom. Res.* 1926. Mar. Vol. 16. Pt. 4. pp. 399–405. With 6 text figs [10 refs.]

The particular sandflies found by the authors in Jericho are *P. minutus* of Rondani, *P. minutus* var. *africanus* of Newstead, and a single female specimen in some respects intermediate between the other two, but having what they describe as strikingly different spermathecae from one of them. Apart from the differences in spermathecae the authors state that these three forms can be discriminated, as regards the female, by certain features of the pharynx and buccal cavity. The males of the first two (the third is a female sole) can be less easily discriminated by corresponding, but much less pronounced, differences.

The authors' conclusion is that the characters of the pharynx, buccal cavity, and spermathecae are diagnostic of the three several species [The said characters, which are illustrated by enormously enlarged figures, would be difficult to describe. The authors do not say how many specimens of what they can otherwise determine as *P. minutus* and *P. africanus* they have compared, and they state that they had only one specimen of the third form (in some respects intermediate) for comparison. Moreover, the figure of a spermatheca of this third form appears to the reviewer to be essentially similar to the corresponding figure of *P. africanus*.]

A. A.

SINTON (J. A.). **Notes on some Indian Species of the Genus** *Phlebotomus*. **Part XV.**—*Phlebotomus newsteadi* **n. sp.**—*Indian Jl. Med. Res.* 1926. Jan. Vol. 13. No. 3. pp. 559–563. With 8 figs. on 1 plate. [2 refs.]

Three specimens of this interesting new species—characterized by its large size (3.3–3·7 millim.), conspicuously long legs, and remarkably broad halteres—have been caught at Kasauli.

A. A.

i. POPOFF (Peter). **An Attempt to Steading [? Study] Phlebotomus in Turkestan.**—*Russian Jl. Trop. Med.* 1926. No. 1. English summary p. 28. [In Russian pp. 15–20. 18 refs.]

ii. POPOW (P. P.). Ueber einen neuen russischen Phlebotomus und die bisher in Russland entdeckten Phlebotomen. [**A New Russian Phlebotomus and the Phlebotomi already Known in Russia.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. June 1. Vol. 30. No. 6. pp. 240–248. With 4 text figs. [12 refs.]

i. It is stated that Oriental sore and kala azar occur in many places in Turkestan and that *Phlebotomus papatasii*, *P. minutus* and *P. perniciosus* exist there as well as two local species known as *P. caucasicus* and *P. li*.

ii. Describes and figures *Phlebotomus li*, a new species from Turkestan.

A. A.

VENERONI (Carlo). Le "Myiasi" nella Somalia Italiana. [**Myiasis in Italian Somaliland.**]—*Riforma Med.* 1926. May 3. Vol. 42. No. 18. pp. 416–417. With 1 text fig.

A sketchy article, not containing much that is original. In Somalia, myiasis is said to be not rare, but not much studied. Cordylobia is said to exist there and another species found in skin lesions is a *Lucilia*, probably identical with *argyrocephala*, which also attacks domestic animals. The author has also observed intestinal myiasis due to another, undetermined, species.

A. A.

WUPPERMAN (R. C.). **A Case of Myiasis of Antrum of Highmore.** [Memoranda.]—*Jl. Port-of-Spain Med. Soc. for 1924.* pp. 104–105.

The patient in this case was admitted for an inflammatory swelling over the right supra-maxillary region and an offensive discharge from the nostril, without any evidence of necrosis of the nasal bone.

He had a long-past history (38 years' interval) of a blow on the nose and an operation for deviation of the septum On opening the antrum of Highmore a large quantity of thin sanguineous pus and about 30 maggots of *Cochliomyia macellaria* came away The antrum was scraped with a blunt spoon, irrigated and drained, and 2 or 3 maggots would come away through the opening in the antrum or through the nose whenever the cavity was washed out during the following 10 days Recovery was complete in 2 weeks

A A

PARMAN (D C) **Benzene as a Larvicide for Screw Worms.**—*Jl Agric Res* 1925 Nov 1 Vol 31 No 9 pp 885–888 [1 ref]

In larvicidal power benzene ranks with ether, chloroform, carbon tetrachloride and xylene For maggots in a wound it is not so good as chloroform and carbon tetrachloride unless the wound be dry, since it floats instead of mixing with the serum

A A

SIEKHOVEN Jr (J H Schuurmans) **Studies on *Hippobosca maculata* Leach and *H equina* L. in the Dutch East Indian Archipelago.**—*Parasitology* 1926 Jan Vol 18 No 1 pp 35–50 With 1 plate, 1 map & 5 text figs [14 refs]

The author has observed *Hippobosca maculata* in the D E I Archipelago, where it is a serious pest of horses on the particular islands of the Timor Archipelago He describes the more important characters of the male, female, and pupa and the interesting events of the life history The number of ova produced by a female ranges between 6 and 10, but the number of pupae actually developed is only between 4 and 6 The pupa is born 12 to 14 days after the pairing of the sexes Pupae are deposited in holes and cracks in the woodwork of stables, fences, etc in crevices in the bark and about the roots of trees, between stones, and possibly on pasture grounds The pupa stage lasts, on an average, 25 days though occasionally an imago may be found alive but unable to free itself at 49 days The principal local host is the horse , in one batch of 37 horses 7,160 flies were collected after dipping, in another batch of 27 horses 16,225 flies , in another batch of 4 horses 4,358 flies Other local hosts are Bengali cattle, buffalo, goat, sheep, dog rarely, man exceptionally Natural enemies of the flies are spiders, the cattle egret (*Bubulculus coromandus*), and a species of digger wasp.

A A

NIGERIA Sessional Paper No 1 of 1926 **Report of the Tsetse Fly Conference held at Kaduna, September, 1925.**—45 pp 1926 Lagos Govt Printers

The greater part of this report consists of matter with which those who are interested in tsetse-fly control have for some time been well acquainted—matter circulated mainly for the benefit of non-professional members before the assembling of the Conference The essence of the Report appears in a paper by Dr W B JOHNSON and Mr Ll LLOYD which is to be found in an Appendix These authors state that sleeping-sickness is increasing in the northern provinces of Nigeria and that its increase is attributable not to increased spread of the tsetsefly but to (1) a tendency of the inhabitants to start small scattered farms, (2) to the freer movement of the people in modern times and (3) to the play of large enterprises like railway construction and mining, where labour is being brought in touch with colonies of fly They believe that they can eradicate the fly from the northern provinces by the method of clearing and settlement which creates an environment unsuitable for it They have proposed to make an experiment to this end in an area of about 30 square miles draining into Lake Chad, where the water-courses are bordered by dense fly-infested thickets This area they propose to be cleared settled and cultivated Two local Emirs have been interested in the project which now only requires authoritative sanction If the experiment prove as successful as SWYNNERTON S similar but larger experiment in East Africa it would be natural to expect that the method of control by clearing and big settlement would be generally adopted The authors recognize that this would be a matter of special administration on the basis of co-operation between the sanitary veterinary, agricultural forestry and mining departments and this Conference held at Kaduna, on the 25th of September 1925 is the outcome of their proposals

In the organization of settlement schemes of tsetse-fly control various interests outside the sanitary department are affected, and information must be collected from various sources The *Administrative Service* would have to consider how native chiefs could be interested in the subject, how natives could be induced to settle in the cleared lands—by remission of taxation and forestry fees, by exemption from forced labour outside their settlement, by bonus by digging them wells and making them roads, by free or cheap issue of farming implements, how pressure might be brought to bear on the native administration, whether late grass burning could be enforced, whether the existence of small scattered farms could be forbidden whether immigration of alien natives could be permitted, and whether political officers could be spared and seconded for co-operation and supervision The views of the *Veterinary Department* will be wanted upon the effects of late burning upon pasture upon movements of cattle, and upon the stationing of veterinary officers or the starting of ranches in the cleared areas The co-operation of the *Agriculture Department* comes in with advice on farming the cleared tracts, with the question of encouragement of settlers by distribution of seeds and implements, and with the question of departmental farms In respect of the *Forest Department* it is necessary to know whether clearing is likely to lead to desiccation, and whether late burning of grass would affect the forest reserves, the department also can give advice in methods of clearing The *Mining* industry is touched in the matter of regulations for medical supervision of labour, for compulsory clearance sufficient to keep large gangs of men separate from fly, even for actual prohibition in districts where trypanosomiasis is prevalent, similar questions affect the *Railway Department* Last come the questions of the necessary staff and the cost .

It is the scope and nature of the questions that is of a general interest, but the opinion of the Veterinary and the Forest Departments that late burning of grass, if continued, ruins pastures and leads to desiccation, may be noted The Forest representative also expressed his conviction that the segregation of fly-infested areas is futile so long as the ubiquitous and large-scale annual migrations of Fulani cattle are permitted or are uncontrolled, movement should be confined to special "lanes" 8 to 10 miles wide, and these lanes should be lanes of clearance and settlement.

The Conference agreed to the proposed experiment in clearance and settlement, and to the extension of survey work, and it admitted the necessity of supervisionary measures in connexion with mining and railway construction. It "found itself in agreement" with the suggestion of a subsidy of £10,000 for 1926–27, of £15,000 for 1927–28, and of £20,000 for 1928–29, for tsetse-fly investigation. It approved the proposal that five medical officers and one administrative officer should be seconded for tsetse-fly and trypanosomiasis investigation, and that one officer from each of the agriculture, forestry, and veterinary departments should be available for assistance; and it recommended that an organizing committee should be formed with the Senior Tsetse Investigator as chairman.

A. A.

RODHAIN (J.) Le recul de la tsétsé : *Glossina morsitans* devant l'occupation européenne au Katanga. [**The Retreat of** *G. morsitans* **before the European Occupation of Katanga.**]—*Bull. Soc. Path. Exot.* 1926. Mar. 10. Vol. 19. No 3. pp. 222–235. With 1 text fig. [3 refs.]

This paper is full of detail. Its conclusions, of general interest, are that in Katanga—in the regions of Elizabethville, Bukama, and Kabalo—*Glossina morsitans* has disappeared from considerable tracts of woody savannah (park forest) since 1911–1912. In the higher and drier Elizabethville country this species has withdrawn beyond the cleared and settled land; but in the lower and more humid Kabalo country only to the limits of the cleared land. In the former country there has been a corresponding disappearance of big game animals; in the latter country only a thinning of their numbers.

In the case of *G. palpalis* there has been little change, this species having disappeared only in certain places in Bukama where the banks of the river have been cleared.

A. A.

RODHAIN (J.). Existence d'un foyer de glossines du groupe *morsitans* dans le Bas-Ouellé. [**A Focus of Tsetse of Morsitans Group in the Bas-Ouellé District.**]—*Bull. Soc. Path. Exot.* 1926. Mar. 10. Vol. 19. No. 3. pp. 197–198. [1 ref.]

Notes the capture of a single specimen of a species of Glossina—which, since it is a female, cannot be identified more exactly than *morsitans* or *submorsitans* or *swynnertoni*, south of the Louna river, between Lat. 4° and 5° N., and about Long. 25° E. The Louna is an affluent of the Gangou tributary of the Bili river, which again is a tributary of the Ubangi.

A. A.

RHODESIA AGRICULTURAL JOURNAL. 1925. Sept. Vol. 22. No. 6. pp. 634–635. **Operations against Tsetse Fly.**

As tsetse-fly have been invading a settled area in the Lomagundi district an attempt is to be made to bar their advance. The barrier is to be a strip of land 10 miles wide (and 30 to 35 miles long) enclosed within two fences. The southern line of fence is to be erected first, and then as the northern line is being set up, in sections, the game will be driven out—not destroyed. The outside of the two fences will be further protected by brushwood ; but nothing will be done to the strip of land enclosed within the fences except burning its brushwood in the course of driving out game, and clearing a margin of 50 yards just inside each line of fence. When all is finished the fences will be patrolled by a European with native assistants to keep the fences in repair and shoot any animals trying to break through the barrier.

A. A.

JACK (R. W.). **Tsetse Fly in the Lomagundi District. Experimental Operations.**—*Rhodesia Agric. Jl.* 1926. Feb. & Mar. Vol. 23. Nos. 2 & 3. pp 134–150 ; 257–267. With 1 map & 7 figs.

This paper describes the inception of an experiment for preventing the spread of tsetse-fly from a focus lying about Long. 30° E. and Lat. 17° S. between the Angwa and Hunyani tributaries of the Zambesi. The local forest is described as mainly Brachystegia savannah, with some fringes of big forest in places along banks of streams. Big game of various species is fairly plentiful. Fly has been spreading from this area, probably because the settlers are really farmers and do not shoot much, the natives do not carry arms, and a dog-tax is levied.

To clear a belt of forest and maintain it clear, in order to stop the outset of fly, would be too expensive for a country so scantily populated and infertile For the same reason killing off the fly by late grass fires is impracticable. In short the Swynnerton policy of enlisting the inhabitants is not feasible, since there is not a sufficiency of inhabitants to enlist to any purpose. The policy decided on, therefore, is to create a gameless buffer of forest between the fly-infested area and the farmers settled beyond it. Two fences have been set up along a front of about 30 miles between the Angwa and Hunyani rivers, one fence being along the edge of the settled country and the other fence being 10 miles outside it. The fences are six feet high, and are made of six to seven strands of 12½ gauge barbed wire stretched where possible on living trees as posts. The forest along either border of this fenced zone has been cleared to a depth of 50 yards, and beyond each border-clearing is an additional rampart of brushwood. Within the cleared zone the game has been expelled, and no cattle or sheep or goats are to be allowed to enter it. A European forest ranger with a staff of native hunters keep the fences, etc., in repair, and stop any return of game.

A. A.

i. JOFF (I.). Materiali k Posnanju Fauni Ektoparasitov Nugo-Vostoka Rossii [**Contributions to the Knowledge of the Fauna of Ectoparasites in South-East Russia.**] Ocherk Organisazii Isuchenia Fauni Ektoparasitov na Nugo-Vostoke. [**Outline of the Organization for the Investigation of the Fauna of Ectoparasites in the South-East of Russia.**]—*Vjestnik Microbiologii & Epidemiologii.* Saratov. 1925. Vol. 4. No. 4. pp. 53–64. [48 refs.]

ii. LOKHOV (M.), MITIN (S.), POKROVSKAYA (M.), KOTELNIKOV (G.), MIKHAILOV (A.), OSTRETZOVA (M.), DOBROVA (M.), ZAKHAROVA (A.), SHAGURINA (N.), KNIAZEVSKI (A.), ZINKOVSKI (D.), JOFF (I.). Materiali Zimnich Sporov 1923–24 i 1924–25 Godov po Ektoparasitam Shivotnich i Chelovieka. [**Materials collected during the Winter 1923-24 and 1924-25 from Domestic Animals and Man.**]—*Ibid.* pp. 64–75.

Percentage of fleas found on man and certain domestic animals :—

	Man.			*Dwellings.*			*Dogs.*			*Cats*		
	P. irritans.	Ct. canis.	Ct. felis.	P. irritans.	Ct. canis.	Ct. felis.	P. irritans	Ct canis	Ct. felis	P. irritans.	Ct. canis.	Ct. felis.
In Towns	74	13	13	—	—	—	5	88	7	14	—	86
In Kirghese settlements ...	97	—	3	93	—	7	92	—	8	25	—	75
In Russian villages	98	—	2	95	—	5	25	74	1	24	11	65
Total ...	96	1	3	93	—	7	70	23	7	25	1	74

N B.—Total number of fleas was 4,960.

One rodent flea (*Amphipsylla contigua*, Jord. & Roths.) was found on a dog. Similar findings had been formerly made by NIKANOROFF, who found one *Amphipsylla* sp. on a human plague corpse and one *Ceratophyllus* (? *londinensis*) on a bed.

Wu Lien Teh & R.P.

JOYEUX (Ch.). Les récentes acquisitions en entomologie médicale. [**Recent Work in Medical Entomology.**]—*Le Bull. Méd.* 1926. Jan. 27, 30. Vol. 40. No. 5. pp. 109–116.

This is merely a résumé of some not very recent work in medical entomology—the identity of the mite in ordinary itch and in Norwegian itch, itch due to food-mites and harvest mites, pathogenous effects of ticks, bite of Simulium, fleas and plague, transmission of *Loa loa*, tularaemia, pathogeny of Phlebotomus, persistence of Anopheles in temperate countries after disappearance of malaria.

A. A.

Marcenac (M.). Innocuité de *Galeodes olivieri* au Maroc. [**Harmlessness of *G. olivieri* in Morocco.**]—*Bull. Soc. Path. Exot.* 1925. Dec. 9. Vol 18 No 10 pp 781–793 [1 ref]

Galeodidae (known in Southern India as "jerrimunglums"), great, heavy, spider like creatures found chiefly in arid tracts of hot countries, are generally regarded as being, like Ancient Pistol, terrible of aspect but quite inoffensive in action In northern Africa, however, *Galeodes olivieri* is reported among certain tribes to be as dangerous as a scorpion. The present author wishes to place it on record that this species too is innocuous

A. A.

Wada (Hiratake) Klinische und experimentelle Untersuchung ueber die durch die Giftraupe *Dendrolimus spectabilis* verursachte Dermatitis und ihre Ursache (II Mitteilung) ueber das Gift des Stichhaars von *Dendrolimus spectabilis* [**The Poison of the Nettle-Hairs of *D spectabilis***]—*Japan Jl Dermat & Urol* 1926 Mar Vol 26 No 3 German summary pp 6–7 [In Japanese pp 230–244 [24 refs]

The nettle hairs of this caterpillar and the dermatitis caused by them have already been described (*ante*, p 295), the present paper deals with the chemical nature of the venom

A watery solution of the alcoholic extract of the powdered hairs is as active as the hairs of the living caterpillar in causing urticaria The venom has no haemolytic action it does not contain either formic acid or cantharidin it gave no precipitin reaction with the serum of four men who had been stung by the hairs 4 months before

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i **Martini** Die Stiche der Gliederfussler und ihre Wirkung auf die Haut [**Stings or Bites of Arthropods and their Effect on the Skin.**]—*Dermat Woch* 1925 Nov 14 Vol 81 No 46 pp 1650–1659

ii **Seydel (Ch)** Le laboratoire d'entomologie [**A Laboratory of Entomology.**]—*Bull Méd du Katanga* 1925 Oct Vol 2 No 5 pp 247 249

iii **Escomel (E)** Un nouveau pseudo meloïde insecte médicinal du Perou **A New Pseudo-Meloïd from Peru.**]—*Bull Soc Path Exot* 1926 Mar 10 Vol 19 No 3 pp 198 201

iv **Sternberg (Hugo)** Ein Tierparasit in der männlichen Urethra [**An Animal Parasite in the Male Urethra**]—*Klin Woch* 1926 Feb 5 Vol 5 No 6 pp 229 230

i This is a good enough compilation but is destitute of new facts or novel inferences

ii This paper states that an entomology laboratory has been established at Elizabethville and gives some simple instructions for the killing and packing of insects

iii Another species of blister beetles

iv Note of the finding of a larva of the common Ptinid beetle *Niptus hololeucus* (a casual cosmopolitan domestic pest) in the urine of a man suffering from post gonorrhoeal urethritis

A. A.

Adler (S) & Theodor (O) The Mouth Parts Alimentary Tract and Salivary Apparatus of the Female in *Phlebotomus papatasii* With Addendum — *Ann Trop Med & Parasit* 1926 Feb 11 Vol 20 No 1 pp 109 142 With 7 plates & 2 text figs [8 refs]

Alessandrini (Giulio) & Missiroli (Alberto). **Sulla struttura dell' apparato respiratorio delle "Anopheles." On the Conformation of Respiratory Apparatus of "Anopheles."**—***Riv. d. Malariologia.*** **Rome. 1926. Jan.–Feb.** Vol. 5. No. 1. **pp. 35–43. With 10 text figs. English summary p. 111.**

Catanei (A.) Nouveaux gites à ***Anopheles hispaniola*** en Algérie.—***Arch. Inst. Pasteur d'Algérie.*** 1925. June. Vol. 3. No. 2. pp. 138–139. [2 refs.]

——. L'importance des gites à anophèles constitués par les marelles qui se forment en été dans le lit des oueds d'Algérie.—***Arch. Inst. Pasteur d'Algérie.*** 1925. June. Vol. 3. No. 2. pp. 140–141. [2 refs.]

Christophers (S. R) & Barraud (P. J.). The Development of the Male and Female Hypopygium of ***Phlebotomus.***—***Indian Jl. Med. Res.*** 1926. Apr. Vol 13 No 4 pp. 853–870. With 18 figs on 4 plates. [13 refs.]

——. *A* (*Myzomyia*) *pattoni*, a New Anopheles from Shan-Tung, North China; with Notes on some other Species of Anopheles from the same Locality.—*Indian Jl. Med. Res.* 1926. Apr. Vol. 13 No. 4. pp. 871–877. With 7 figs. on 1 plate. [4 refs]

Cosimo (Basile Vito). Studio sui denti mascellari di anopheles catturati in varie regioni dell'Emilia e del Ferrarese.—*Ann di Med Nav. e Colon.* 1925. Nov.–Dec. Year 31. Vol. 2 No. 5–6 pp 261–279 With 1 plate.

Hogue (Mary Jane) Studies on *Trichomonas buccalis*—*Amer. Jl Trop. Med.* 1926 Jan Vol. 6 No. 1 pp 75–89 With 15 figs on 1 plate. [12 refs.]

Iyengar (M O T) Occurrence of a Coprid Beetle, *Caccobius mutans*, Sharp, in the Human Intestines—Reprinted from *Proc Fifth Entom Meeting held at Pusa, 1923.* pp 201–202 With 2 figs. on 1 plate [6 refs]

Johnson (Henry A.) Occurrence of *Anopheles vestitipennis* in Porto Rico.—*Amer. Jl. Trop. Med.* 1926 Mar. Vol 6 No. 2. pp. 153–155

Kofoid (C. A.). The Occurrence of Cysts of *Councilmania lafleuri* Kofoid and Swezy in the Duodenal Drainage—*Proc Soc Experim. Biol & Med.* 1926. Jan. Vol 23. No. 4 pp 299–300

—— & Allen (Ena A). On the Culture in vitro of *Councilmania lafleuri* and *Endamoeba coli.*—*Proc Soc. Experim Biol & Med* 1926. Jan Vol. 23. No 4. pp 300–301 [1 ref.]

Senevet (G) & Rossi (P) Note sur deux Ixodidés, parasites accidentels de l'homme.—*Arch Inst Pasteur d'Algérie* 1925. Sept. Vol 3. No. 3. p 298.

Shortt (H E), Barraud (P. J) & Swaminath (C S.). Further Observations on the Breeding of *Phlebotomus argentipes* in Assam—*Indian Jl. Med. Res.* 1926 Apr. Vol 13 No 4 pp. 943–946 [1 ref]

Stankovíc (Sinisa) Zur Kenntnis von *Anopheles superpictus* in Mazedonien.—*Arch. f. Schiffs- u Trop-Hyg* 1926 Mar 1 Vol 30. No 3 pp. 104–112 With 4 text figs

BUREAU OF HYGIENE AND [redacted]ISEASES.

TROPICAL DISEASES BULLETIN.

Vol. 23.] 1926. [No. 10.

UNDULANT AND ABORTUS FEVERS.

CAYREL (A. M.). Faut-il demembrer la fièvre de Malte. [**Undulant Fever: One Disease or More.**]—*Paris Méd.* 1926. Feb. 13. Vol. 16. No. 7. pp. 141–147.

The author gives a critical résumé of recent observations on the unity or duality of undulant fever and epidemic abortion. There are few new facts, but he brings specially to notice the observation that, in Northern Italy, a prolonged fever in man, in an epidemic form, is definitely traced to infection through contact with aborted bovines; cases of VIVIANI, FICAI & ALESSANDRINI and others are cited. He states, however, that abortion may be due to a number of germs, para-typhoid, spirochaetes, etc, and not necessarily to *B. abortus.* " It is undoubtedly true that cattle and pigs are very dangerous for man, especially at the time of abortion, when they are able to transmit an infective bacillus " GABBI, and recently BASTAI & CERRUTTI, have isolated the *M. melitensis* from the milk of cows in contact with goats infected with the germ; this fact [if confirmed] together with the production of abortion in cows by the experimental injection of *M. melitensis* (EVANS) appears to link the caprine and bovine infections. NICOLLE, BURNET & CONSEIL consider the organisms similar except that abortus is not pathogenic to man. The dual theory is strongly supported by Italian authors, especially FICAI & ALESSANDRINI, who have described morphological, cultural, biological and clinical differences; the different thermostability of the two is a most important diagnostic point, the true agglutinins of *M. melitensis* being inactivated at 65° C., those of *B. abortus* at 75°. This, however, is not reliable according to GIUGNI & ROSSI. The clinical differentiation of undulant and abortus fevers set out in a table can hardly be accepted, particularly the statements that in undulant fever the duration is generally short, sweats are not profuse and spleen enlargement is inconstant.

The main contention is, however, made out, that the danger of infection from cattle and pigs is a very real one, but whether this is the same as that from goats is yet uncertain. The subject is now so important and the disease is so widespread and affects so many classes of the community that properly concerted measures are required for its elucidation and prevention

(K3049) Wt P13/215 1,625 10/26 H & Sp Gp 52

[It is curious that in Italy no mention is made of infected ewes which appear to be so important in Southern France The recent work of Th SMITH showing the histological differences produced in guineapigs by the two organisms is not noticed]

P W Bassett Smith

SMITH (Theobald) **The Relation of *Bacillus abortus* from Bovine Sources to Malta Fever.**—*Jl. Experim Med* 1926 Feb. 1 Vol 43 No 2 Pt 1 pp 207–223. [26 refs]

The author states that in experimental work with melitensis and abortus two sources of error have been common, namely, the use of strains that are too old and the utilization of too large doses Working with new and old strains of the two organisms, subcultured intraperitoneally in guineapigs, and using equal doses he found that recent strains of *M melitensis* were more virulent than old ones, and the same held good for paramelitensis He found that the early changes in the spleen and lymph glands of guineapigs inoculated with a human strain of *M melitensis* were entirely different from those produced by *B abortus*, but that later, though distinct, the differences were less apparent An old strain from ZAMMIT was useless for inoculation work He states that previous published work and his experiments both indicate that the porcine strain of abortus resembles the human strain more than does the bovine Two cultures, resembling *B abortus* from cattle isolated from human cases of so-called Malta fever were shown by their effects in guineapigs to be *not identical* with bovine strains He comes to the conclusion that the evidence is inadequate to establish that the bovine abortus is able to produce a disease simulating undulant fever in man

P W B-S

MOORE (Veranus A) & CARPENTER (Charles M) **Undulant Fever in Man associated with Bacteria indistinguishable from** *Brucella abortus* —*Cornell Vet* 1926 Apr Vol 16 No 2 pp 147–152 [29 refs]

The authors review the recent developments of the work on melitensis and abortus diseases Bang bacillus was found in 14 per cent of samples of cows' milk by SCHROEDER & COTTON, a finding confirmed in many places by others Later, LARSON & SEDGWICK found antibodies to the organism in the blood of women who had recently aborted , they were also demonstrated in the blood of children Cases of undulant fever have been reported where no evidence of infection from goats was obtainable, and in 1924 KEEFER reported a case of undulant fever due to *B abortus* , later KORTE & DUNCAN reported other cases ORPEN finds a fever like undulant in Rhodesia due to *B abortus,* and cases have followed infection from handling animals or parts of animals suffering from epidemic abortion It is stated that the strains of abortus obtained from man have produced abortion in cattle Theobald SMITH has shown that the variety of abortus found in pigs is more nearly allied to the organism found in man than is the abortus of cattle It is certain that some strains of the *B abortus* ingested in milk can produce a fever in man, but further work is being systematically carried out with regard to " the relationship that appears to exist between the Bang abortus disease and the certain but as yet imperfectly described cases of illness in man."

P. W. B-S.

FAVILLI (Giovanni). Ricerche e considerazioni critiche sulla febbre mediterranea e sull'aborto epizootico. (Epidemiologia della Provincia di Firenze nel 1925.) [**Epidemiology of Undulant Fever and Epizootic Abortion in Florence in 1925.**]—*Sperimentale.* 1926. Vol. 80. No. 1–2. pp. 41–76. [68 refs.]

During 1925 there were 120 notifications in Florence of cases of undulant fever. Fifteen of these appeared to have contracted the disease in the town, the remainder in the neighbouring districts. Many had nothing to do with goats, nor did they drink goats' milk or eat any of its products. Some probably contracted the disease by eating raw vegetables and salads grown on soil contaminated by goats and sheep. Others, again, had been in contact with aborting or recently aborted cows. Lastly, some could be explained only by supposing that a carrier was present. A second section of the paper records the results of tests carried out by the author to confirm or refute the question of previously reported differences between the organisms of undulant fever and contagious abortion. He finds that they are morphologically indistinguishable, and react similarly serologically, or that the differences are too slight to be of any true diagnostic value. The last section is concerned with a general discussion of the subject, whether the two germs are identical, or are closely allied strains derived from a common ancestor, any slight differences being the result of passage through and adaptation to different hosts. The question, as usual, is left unsolved.

H. Harold Scott.

HUDDLESON (I Forest). **Is *Bacterium abortus* Pathogenic for Human Beings?** —*Jl. Amer. Med. Assoc.* 1926. Mar 27. Vol. 86. No. 13 pp. 943–944. [10 refs.]

The following interesting cases are reported. (1) A graduate of East Lassing, Mich., while working with some newly isolated cultures of *B. abortus* in the winter of 1924, became ill and continued to have an irregular fever for over 12 months; no definite diagnosis was made. He then became suspicious of infection, and his blood reacted up to 1 in 50 to both abortus and melitensis. Blood and urine were negative on culture. He had not worked at any time with *M. melitensis.* (2) Also a student in the laboratory, working for one year with bovine strains of *B. abortus*. He had severe fever with relapses, of prolonged duration. His blood, from which *B. abortus* (?) was isolated, agglutinated both organisms up to 1 in 2,000. He had been drinking raw cows' milk which was proved to be infected with *B. abortus.* (3) Again a student working with the cultures; clinically the type was ambulant. Blood culture and agglutination were positive. The milk used by, the third was the same as that used by the second. In view of the opportunity of laboratory infection, it is impossible to say that the infection was due to the milk.

The technique of FICAI & ALESSANDRINI was used and the results, both by agglutination and anaerobic cultures, pointed to *B. abortus.*

The author says, if these cases were contracted from raw cows' milk, then why not more cases in U.S.A.? The matter is explained thus. (1) It is rare to find the organism in the udders of cows in full milk and when found it is only a light infection, not more than 500 per cc. [*cf.* the heavy infection found in goats]. (2) When the milk is drying up, there are millions per cc.; if this should get into ordinary milk, gross infection takes place and the sample milk becomes dangerous.

P. W. B-S.

ABEN-ATHAR (Jayme). Um caso de infecção para-melitense. **[A Case of Paramelitensis Infection.]**—*Sciencia Medica.* 1926. Jan. 31. Vol. 4. No. 1. pp. 19–27.

A little girl was bitten by a cat, and two days later was seen by the author, Director of the Pára Institute of Hygiene, who at first thought of giving antirabic treatment, but as the cat was apparently quite healthy, he decided to clean the wound and wait. Soon afterwards the child complained of headache and shivering and was feverish. Two days later symptoms became aggravated with delirium and convulsions, and within a week of the accident the patient became comatose and died.

From the blood of the child and from the animal, which it seems had recently aborted, an organism was isolated which proved by serological reactions to be one of the paramelitensis group. No other source of infection could be discovered. The latter part of the paper is occupied with the usual discussion as to the identity of *M. melitensis* and *B. abortus.*

[The value of this report depends upon the reliability of the bacteriological findings—and from the clinical history of the case the conclusion would appear doubtful.—P. W. B-S.]

H. Harold Scott.

D'ARBELA (Felice). Ittero infettivo nel corso di una febbre mediterranea. **[Infective Jaundice in Undulant Fever.]**—*Riv. di Clin. Med.* 1926. Mar. 30. Vol. 27. No. 6. pp. 201–216. With 1 chart in text. [29 refs.]

This case is reported and discussed in minute detail. The disease began with jaundice, and this is ascribed to hepatic localization of the *M. melitensis.* The diagnosis of undulant fever was arrived at because the patient's serum agglutinated the organism in a titre of 1 800. Blood-culture, however, was negative and the temperature chart, which is given, bears no resemblance at all to that of this disease. The nature of the jaundice was determined by exclusion. The connexion between the two conditions is not altogether convincing. [May we offer a remonstrance against the growing habit of authors abroad of swelling reports with irrelevant detail? For example, the facts that the father of the above patient was aged 61 and had a double hernia, while the mother was 51 and suffered from varicose veins, have no bearing on infective jaundice or undulant fever in their offspring.]

H. Harold Scott.

DESAGE, PELLERIN & VINERTA. Un cas de méningite à mélitensis. Contribution à l'étude de la méningite de la fièvre de Malte. **[A Case of Melitensis Meningitis.]**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1926. June 3. 3rd Ser. Year 42. Vol. 50. No. 19. pp. 872–879. With 2 text figs.

Cases of melitensis meningitis are uncommon, but in those which have been described the occurrence of an increase in the mononuclear cells and sugar content is said to be distinctive. In the case reported, a girl of 18, there was a *decrease* in the sugar, but a marked mononuclear increase (Polynuc. 12 per cent., Large mononuc. 12 per cent., Small mononc. 7 per cent., Lymph. 68 per cent., Trans. 1 per cent.). The diagnosis therefore from chronic tuberculous meningitis was difficult. In this case the meningitic symptoms appeared in the fourth month after a long fever of undulant character; two serum tests gave negative agglutination reactions, but a variety of the *M. melitensis* was isolated from the cerebrospinal fluid, the only biological character which differentiated it from tuberculosis.

The authors conclude that the infecting organism is able at the terminal stages of undulant fever to localize itself in the meninges and cause a masked form of meningitis, without fever; the characteristic signs being severe headache, diplopia and tachycardia.

The patient was treated with autovaccines and by radiotherapy and a complete cure resulted.

P. W. B-S.

DARGEIN. Mélitococcie (étude clinique des cas observés depuis 1920 à l'hôpital Sainte-Anne). [**Undulant Fever. Clinical Study of Cases seen since 1920.**]—*Arch. Méd. et Pharm. Nav.* 1926. Apr.-May-June. Vol 116 No. 2. pp. 89–111.

The author states that before 1912 cases of undulant fever were very rare in the hospital, but that in 1920 they became frequent and have been ever since. In one case he was able to fix 8 days as the incubation period. Among the symptoms, special attention is drawn to the severe headache, and one case with haemoptysis is recorded. The duration was 5 to 6 months, never as long as a year. There were many masked forms (fruste) which caused confusion in diagnosis. Indirect contagion through food was most common, but in many cases infection was undoubtedly direct. The author states that there was no case in which infection from cows' milk could be clearly proved. He does not consider that any specific treatment has been found. [This is an interesting description of the disease and worth reading, but it does not contain anything new.]

P. W. B-S.

SERGENT (Emile), MIGNOT (René) & KOURILSKY (Raoul) A propos d'un cas de fièvre de Malte. [**A Case of Undulant Fever.**]—*Bull et Mém. Soc. Méd. Hôpit de Paris.* 1926. Feb. 11. Year 42. 3rd Ser. Vol 50. No 5 pp 197–201

The authors describe in detail a case of undulant fever in a native of Damascus in which the clinical signs and symptoms were indefinite. The diagnosis was made by blood culture and serum tests, and the good results of vaccine therapy were well shown; the intradermal method was not tried. The disease was probably due to infection acquired in Corsica. The importance of laboratory tests is shown and also that a single negative is never conclusive. It was only at the sixth blood culture that the micrococcus was grown and the agglutination titre was not above 1/200.

P. W. B-S.

ACKEN (Henry S.). **A Case of Malta Fever.**—*Jl. Amer. Med. Assoc.* 1926. May 29. Vol. 86. No. 22. p. 1687.

The case reported is that of a minister, aged 37, in New York State. The fever ran a very long course with three definite pyrexial periods. At first it was thought to be typhoid, but all serum reactions were negative, and after admission to hospital no diagnosis was made On readmission, a month later, undulant fever was suspected but blood cultures were negative; the serum, however, gave an agglutinative titre of 1 in 800 to *M. melitensis* and *B abortus* During the pyrexial periods there were few symptoms and the spleen was not palpable There was a definite lymphocytosis. Recovery was spontaneous without any specific treatment

P W B S

GREVAL (S D. S) & ROW (C K) **A Case of Undulant Fever in Aden.**—*Indian Jl Med Res* 1926 Jan Vol 13 No 3 pp 525–529 With 2 text figs

This is the first case recorded from Aden The man was a sepoy The fever was typical with arthritis and constipation The blood agglutinated to 1 in 100 No blood culture was made Convalescence under vaccine treatment was rapid It is suggested that the disease was derived from goats slaughtered at Perim

P W B S

WEYRAUCH (F) Ein Fall von Maltafieber in Jena **[A Case of Undulant Fever in Jena.]**—*Muench Med Woch* 1926 Feb 19 Vol 73 No 8 pp 321–322

In 1914 MÜHLENS drew attention to cases of undulant fever invalided to Germany from German South West Africa but no cases endemic in Germany were found In the case described, the patient contracted the fever while visiting the Riviera, and the cause is said to have been unboiled goats' milk The blood showed a high agglutinating power, up to 1 in 16,000

P W B-S

MGFBROW (M L) **[Malta Fever in Azerbaidjan and its Clinical Aspects.]**—*Russian Jl Trop Med* Moscow 1925 No 4–5–6 [In Russian. pp 29–45 With 4 charts in text 8 refs]

The occurence of undulant fever in Russia was recognized for the first time in 1922, when cases were found in Turkestan and in the Caucasus (Azerbaidjan) The author describes eight more cases from the latter region observed between 1922 and 1924

C A Hoare

TINTI (Mario) Sulla eziopatogenesi di una porpora emorragica fulminante [tipo Werlhof] nel decorso di una febbre mediterranea **[The Pathogeny of Purpura Haemorrhagica in Undulant Fever.]**—*Riv di Clin Med* 1925 Dec 30 Vol 26 No 24 pp 841–861 [29 refs]

A man of 66 years suffered from an attack of undulant fever On the tenth day of disease purpura made its appearance with haematuria and extensive cutaneous haemorrhages The question of the pathogenesis of the purpuric condition is discussed The possibility of the causative organism being of special virulence, or of its becoming relatively so by reason of some auxiliary defect on the part of the patient, and the presence of other conditions, such as tuberculosis or hepatic mischief, are all considered The reasoning is not altogether convincing The patient married, as his second wife, a woman who died of tuberculosis, and a daughter suffered from exudative pleurisy with long convalescence, these facts constitute somewhat slender evidence on which to postulate the disease in the patient The fact that tuberculosis of the adrenals may lead to purpura is mentioned with some prominence, but in the case of this patient no autopsy was held to confirm the presence of tuberculosis anywhere Secondly, hepatic mischief, the result possibly of gall-stones, is suggested as aiding the accumulation of toxic substances and so assisting in bringing about the purpuric state The liver was a little enlarged but there was no jaundice or other indication of hepatic inadequacy, nor any proof of the existence of biliary calculi. To ascribe infective purpura to a "diathetic constitutional element by which an acquired infection takes on a purpuric character," as stated in the author's summary, does not carry the investigation very far.

H. Harold Scott.

ORCUTT (Marion L.). **Agglutination Affinities of the** *Abortus-Melitensis* **Group of Bacteria with Special Reference to Two Human Strains.**—*Jl. Experim. Med.* 1926. Feb. 1. Vol. 43. No. 2. Pt. 1. pp. 225–232. [14 refs.]

These experiments refer to the strains used by Th. SMITH. The conclusions are; "While there appears to be evidence of serological distinctions between *B. abortus* and *B. melitensis* cultures as studied by early workers, the experiments reported in this paper show no serological distinctions among the six strains used. *B. melitensis* 2 and *B. melitensis* 3 were found to be identical with the bovine and swine strains by means of agglutination and agglutinin absorption reactions in unheated sera, by agglutination in heated sera, and with the use of heated cultures in unheated and heated sera."

P. W. B-S.

TRENTINI (Silvio). Sull' agglutinazione con l'acido lattico come mezzo di differenziazione del *M. melitensis* dal *B. abortus* (Bang). [**Agglutination by Lactic Acid as a Means of Differentiating between** *M. melitensis* **and** *B. abortus* **(Bang).**]—*Pathologica.* 1926. June 15. Vol. 18. No. 416. pp. 309–310. [3 refs.]

The author has repeated the experiments of VERCELLANA and ZANZUCCHI with respect to the non-specific agglutination of *M. melitensis* with 1 per cent. lactic acid, and the failure of *B. abortus* to react in the same way. He worked with six strains of the former and eight of the latter.

Four strains of *B. abortus* failed to agglutinate; the other four gave a definite but incomplete agglutination. Two strains of *M. melitensis* gave complete agglutination, the other four partial only.

The question whether, in the passage of *M. melitensis* through bovines and of *B. abortus* through man, the respective organisms become in some way altered or modified in their reactions is yet to be determined.

H. Harold Scott.

VERCELLANA (G.) & ZANZUCCHI (A.). La differenziazione del M. melitense dal B. di Bang mediante un saggio di agglutinazione aspecifica. [**The Differentiation of** *M. melitensis* **from** *B. abortus* **by Non-Specific Agglutination.**]—*Pathologica.* 1926. May 15. Vol. 18. No. 415. pp. 247–252. With 1 text fig.

On the suggestion of Professor SANGIORGI the authors carried out tests to determine whether any valid difference between these organisms could be discovered by non-specific agglutination.

Tests were set up by mixing 1 cc. of bacterial emulsion in distilled water with an equal volume of each of the following: Commercial formalin, corrosive sublimate (1 : 1000), alcohol (95 per cent.), caustic soda, lactic acid, acetic acid, butyric acid, and hydrochloric acid, each in 1 per cent. dilution. After remaining for 30 minutes at 37° C. there was marked agglutination of *M. melitensis* with 1 per cent. lactic acid, and with 0·2 per cent. in 24 hours, whereas Bang's bacillus proved quite negative.

The tests were repeated with eight strains of each organism and, provided that the culture was a fresh one, it was found that *M. melitensis* in six of its strains gave a strong agglutinating reaction, and in the remaining two a weak one, whereas *B. abortus* gave in one instance only a very slight agglutination, namely 1 : 20 in 24 hours.

H. H. S.

IZAR (Guido). Sui fattori determinanti le variazioni di agglutinabilita del micrococco di Bruce. [**Factors determining Variations in Agglutinability of** *M. melitensis*.]—*Riforma Med.* 1926. May 10. Vol. 42. No. 19. p. 433.

The author finds that if a certain strain of *M. melitensis* be grown on simple nutrient agar, and on glycerin glucose agar, and the agglutination reactions be carried out with various sera, after ten or so subcultivations the two show considerable differences. That on agar maintains its morphological, biological and cultural characters and its agglutinability with immune sera or that of undulant fever patients. On the other hand, the culture on the richer medium undergoes changes morphologically to large cocci, which may be in chains, and become more readily agglutinable with normal as well as pathological sera, even in dilutions as high as 1 : 300–1 : 600. After a large number, a hundred or more, of passages on ordinary agar the agglutinating serum needs to be much stronger. Transfer to a richer medium for a few passages restores the original agglutinability, which is then retained for a long time when subcultivated on the simple agar. These facts may afford an explanation of the apparently paradoxical results which have been reported by different writers dealing with a strain grown on different media

H. H. S.

IACONO (L.). [Agglutinine anti-Bang e agglutinine anti-Bruce.] [**Anti-abortus and Anti-melitensis Agglutinins.**]—*Riv. di Patologia Sperim.* 1926. Jan.–Feb. Vol. 1. No. 1. pp. 11–24. [22 refs.] [Summarized in *Bull. Inst. Pasteur.* 1926. Apr. 30. Vol. 24. No. 8. p. 347.]

Experiments were carried out to test the differential agglutinative characters of *M. melitensis* and *B. abortus* as recommended by FICAI & ALESSANDRINI. The author states that although great care was taken the test failed to distinguish between the two.

P. W. B-S.

KRAVETZ (D. A.). Zur Frage ueber Heterogene Aglütinations Reaction bei *Febris melitensis*. [**Heterologous Agglutination in Undulant Fever.**]—*Jl. Méd. de l'Asie Centrale.* Tashkent. 1926. Vol. 5. No. 4. German summary p. 241. [In Russian pp. 210–214.]

The serum of a dog which had been inoculated with a strain of *M. melitensis* and agglutinated the specific organism to 1 in 10,000 agglutinated also 11 out of 14 strains of *Staphylococcus aureus* and *albus* in dilutions of 1 in 50 to 1 in 2,000.

P. W. B-S.

BÉGUET (M) Les caractères differentiels des souches dans le genre *Brucella* et les essais de classification [**The Differential Characters of *Brucella* Strains: their Classification.**]—*C R Soc Biol* 1926 May 14 Vol 94 No 16 pp 1187–1189 [1 ref]

The author states that he has investigated 42 strains of Brucella (*M melitensis, M paramelitensis* from goats, and *B abortus* from cows) to determine whether the methods of BASSETT-SMITH, BURNET, MEYER, EVANS and others are of differential value Morphological and cultural characters, non-specific agglutinability, tendency to agglutinate spontaneously, agglutinogenic power and flocculation at 90° C are not reliable characters for separation of species He states that classification by absorption of agglutinins gives no more certainty than that by the simple agglutinations, for the specific agglutinins vary as much in themselves as the non-specific He never found spontaneous agglutination in 24 hour cultures when the saline emulsion was fresh The parallelism between the flocculation of BURNET and the agglutination by non-specific sera was found to be of real value in the choice of strains for serum tests and for vaccines, but flocculation is a purely individual and not a specific character At the present time he considers that we are unable to differentiate the various groups of the genus *Brucella* but he makes no reference to pathological changes or to toxicity, nor has he noted recent work by DUNCAN and others

[As a generic term the name " Brucella " is likely to be retained]

P W B-S

BURNET (Lt) Observations sur des chevres infectees de *M melitensis* (infection experimentale) [**Experimental Melitensis Infections in Goats.**]—*Arch Inst Pasteur de Tunis* 1926 June Vol 15 No 2 pp 132–144

The author has made a fresh series of experiments upon goats, and puts forward the following conclusions

1 The goat can be heavily infected with *M melitensis* without showing any deviation from health

2 The goat can be infected by various methods without interference with breeding, but goats infected near their term may abort

3 A febrile reaction is produced by reinfection, but not regularly

4 From the injected goats the author has never obtained a positive blood culture

5 After ingestion of living and virulent *M melitensis* the agglutination of the blood may be nil, after injection into the mammary gland it rises gradually, then falls and tends to disappear, high titres are given by subcutaneous and intravenous injections

6 Goats inoculated in the mammary gland or teats do not necessarily go dry, the microbes disappear from the milk in some weeks, the milk may show leucocytes, indicating a mastitis and often a staphylococcic infection

7 In goats infected by repeated and large doses he can never find macroscopic lesions, but in one case there was gland caseation with sterile pus or only staphylococci, in only one case did he find any melitensis colonies It is possible that microbic centres exist which undergo spontaneous bacteriological cure These paradoxical results suggest that there exist differences between natural and experimental infections

P. W. B-S

BURNET (Et.). Sur la resistance au *M. melitensis* de chevreaux nés de chèvres infectées et nourris de lait infecté. [**Resistance to *M. melitensis* of Kids of Infected Goats reared on Infected Milk.**]—*Arch. Inst. Pasteur de Tunis.* 1926. June. Vol. 15. No. 2. pp. 145–160.

Has the kid borne of an infected mother an immunity or at least a resistance against melitensis infection? This question is very important, and was first raised by ZAMMIT in 1908, after the observation of 15 animals. It was answered more or less in the affirmative by him, and the facts on which his deductions were based are given. The author has made fresh observations with 5 animals; he states that though there is great difficulty in making a certain diagnosis of the absence of infection in the goat, yet the observations show that though the immunity (or resistance) is not certain, it is probable and may be of very practical value; and this points to the importance of early vaccination of the kids for prevention of the disease before the mammary glands develop, and thus avoiding infection of the milk.

P. W. B-S.

LANCELIN, SEGUY & DUBREUIL. A propos de l'utilisation possible de la bile comme milieu d'enrichissement du mélitocoque. [**The Possible Utilization of Bile as Enrichment Medium for Melitensis.**]—*C.R. Soc. Biol.* 1926. Mar. 5. Vol. 94. No. 8. pp. 518–519.

The author points out that though for a negative culture test with "bile peptone glucose" 48 hours is sufficient to eliminate T. A. & B., it is not so for other forms of septicaemia, particularly that of *M. melitensis*. If after 30 hours the apparently unchanged medium is planted out on to agar, distinct colonies are frequently found, the first medium acting as an enrichment medium. Technique: For the subculture the material is taken from the very bottom of the tube, 2–3 cc. are transferred to the agar tube, which is allowed to lie flat for 2–3 hours and then placed vertically; a positive result may be obtained in 50 hours.

[As a routine, blood cultures for melitensis taken by the reviewer have been subcultured every 24 hours, but the dew-like colonies rarely appear before the third or fourth day. A positive bacteriological diagnosis could not be made in 50 hours, and it is difficult to understand how the author could *definitely* make such a diagnosis.]

P. W. B-S.

WILSON (G. S.) & NUTT (Muriel M.). **The Occurrence of *Brucella abortus* and *Mycobacterium tuberculosis* in Cows' Milk.**—*Jl. Path. & Bact.* 1926. Apr. Vol. 29. No. 2. pp. 141–148. [18 refs.]

The results produced in guineapigs inoculated for evidence of tuberculous infection have been carefully followed up and analysed to determine the amount of *B. abortus* infection of the milk; and whether in tuberculized animals the abortus infection was more common and severe. The authors found that of 488 samples of cows' milk, 68 contained acid-fast bacilli which could not be cultivated saprophytically, and were presumably tubercle. All the guineapigs were killed three weeks after inoculation. Non-tuberculous lesions were often found, and from 11 out of 35 of these, *B. abortus* was cultivated and described as a small non-motile, non-gram and non-acid-fast bacillus. There was no definite evidence that the combined infection of *B. tuberculosis* and *B. abortus* was more than casual, both thriving independently in the same body. About 5·7 per cent. of the single milks tested from different herds in Cheshire, Lancashire, Derbyshire, Staffordshire and Cumberland were infected with *B. abortus* (in America, COTTON has found the proportion as high as 13 per cent.), but the degree of infection is not stated, an important point as shown by HUDDLESON (*ante*, p. 725).

It seems remarkable that with such a high degree of infection, human abortus fevers are not more frequently found; the frequency is against the unity of the organism with *M. melitensis*, but the sterilization of all milks becomes more imperative.

P. W B-S.

DENGUE AND PAPPATACI FEVERS

SILER (J F), HALL (M W) & HITCHENS (A P) **Transmission of Dengue Fever by the Mosquito.**—*Milit Surgeon* 1926 Jan Vol 58 No 1 pp 57–60

The results of the valuable research work carried out by the authors were described in this *Bulletin*, Vol 22, p 943 The later report shows that experiments were made on 64 volunteer American soldiers There were 111 biting experiments with infected female *Aedes egypti*, of which 47 were successful Among the 64 soldiers dengue was produced by experimental means in 52, that is in 81 per cent All the attempts to transfer the infection by *C quinquefasciatus* (*C fatigans*) failed The virus is present in the blood of the patient shortly before the onset of the fever and may be absent on the third day The Aedes is not infective until the eleventh day, and remains so throughout its life For breeding the larvae, tap water containing slices of ripe banana was found to give better results than the blood serum media at first recommended

P W Bassett-Smith

TOMB (J W) **Colchicum in the Treatment of the After Pains of Dengue Fever.**—*Trans Roy Soc Trop Med & Hyg* 1926 Feb 18 Vol 19 No 8 pp 492–493

The author describes a case of dengue in Bengal in which the subsequent protracted and severe rheumatic pains were unaffected by ordinary treatment These pains came on some four weeks after the acute fever had passed off They affected almost all parts of the body and limbs and were always most severe at night Vinum colchici in 15 minim doses t d s gave immediate relief Though colchicum does not appear to check the progress of the disease, it affords prompt and great relief from the pain and immobility which are the most prominent and distressing features

P W B-S

TRABAUD (J P R) La dengue et les fausses dengues [**Dengue and Pseudo-Dengue.**]—*Arch Med et Pharm Milit* 1926 Jan Vol 84 No 1 pp 39–50 [12 refs]

The author has previously described three-day fever , he now takes up the task of differentiating what he calls true dengue from false dengue (pseudodengue) The former is apparently what was described as Mediterranean dengue during the war, simulating rather closely phlebotomus fever , the latter that type of dengue so commonly found in the middle and far East, having a saddle back temperature curve, and described as seven-day fever by ROGERS He states, however, that in false dengue, as distinguished from true dengue, death is frequent and complications dangerous and severe With regard to the etiology he thinks Mediterranean dengue may be a spirillosis, which three-day fever is not, since it is found to spread so rapidly, and occurs at high altitudes where a mosquito host is very doubtful. He describes the short seasonal fevers thus (1) Endemic in India and Cochin China, spread by Culex (2) West Indies and America, spread by Stegomyia. (3) Mediterranean forms, spread by Phlebotomus (4) World wide, Paludism, spread by Anopheles

[Most authors would place his true dengue with Phlebotomus fever, and regard false dengue as dengue simplex]

P. W. B-S

YOUNG (T C McCombie), RICHMOND (A R) & BRENDISH (G R) **Sandflies and Sandfly Fever in the Peshawar District.**—*Indian Jl Med Res* 1926 Apr Vol 13 No 4 pp 961–1021 With 9 charts, 1 text fig and 13 figs on 5 plates [23 refs]

This is a long record of a most admirable investigation by a Commission on the sandflies and the fever caused by them in the Peshawar District The enquiry was chiefly concentrated on determining the character of the breeding grounds, following up the work done by WHITTINGHAM and others The work was commenced in April, 1925, and was limited to the Peshawar cantonments and Landikotal in the Khyber Pass The chief epidemiological facts noted were, (1) the greater incidence of fever among the non-immune British who stay in Landikotal generally one year only, (2) the lesser incidence among the Gurkha troops among whom some were probably immune, (3) a much lower incidence among other Indian troops who had perhaps some acquired or racial immunity There was a direct relationship between the rainfall and the fever, if the heat was too severe, the breeding places became dried up It was found that the character of the egg follicles and contained ova gave some useful evidence of the age of the fly and the distance of the breeding place

The authors do not agree with WENYON, who says that the fly feeds every second day they found that it takes one feed only in the first 36 hours remains in the house for 60–84 hours, then goes to its breeding ground to lay eggs within 108 hours These breeding grounds are found with difficulty, by recovering the larvae from debris and soil by washing and flotation methods

They found that the following method gave a prolific breeding medium for experimental purposes—an earthenware pot filled with a mixture of organic matter and soil covered with a layer of clay in which cracks had formed by drying, and surrounded with water to keep the contents damp, introduced into a muslin cage in which sandflies are confined

At Landikotal the breeding grounds are in the depths of slightly moist organic matter, lying in hollows on broken ground in nullahs There must always be cracks or crevices, by which the sandflies can gain access to the shelter with darkness, moisture and organic matter which are required for the breeding These are found generally about 80 yards from dwellings They conclude that they were dealing with a distinct disease, not a modified dengue, causing a three or four day fever with bradycardia These cases occur in large numbers in special periods of the year Clinically the cases vary very much, a small proportion only can be described as coming under the typical text-book category *P pappatacii* was the chief, if not the only carrier An ectoparasitic mite is described affecting the flies

For prevention the important points are to find and remove all breeding grounds

P W. B-S

Schapira (L.). Zur Endemie des Pappatacifiebers in Haifa. **[Pappataci Fever in Haifa.]**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. May 1. Vol. 30. No. 5. pp. 196–205. With 1 chart in text. [8 refs.]

At the port of Haifa in Palestine, where there is a constant flow of migrants, epidemics of pappataci fever occur every summer. The disease rarely affects the natives, who appear to have a large degree of immunity. The number of cases varies with the number of migrants, almost all of whom contract the disease in the first year. The author gives a curve of incidence which shows peaks in June and August; this he explains by two broods of sandflies, each when mature carrying infection. The epidemiology thus agrees with the biology of the sandflies. He also notes that altitudes of 1,200 feet are as much infected as Haifa itself. Clinically the cases vary much, an urticarial eruption called "Harara" is not uncommon, and severe haemorrhagic types are seen. The general symptoms are detailed, but do not call for special comment.

P. W. B-S.

Carbo-Noboa (J. M.). [Etiologia del Dengue (Spanisch).] **[Etiology of Dengue.]**—*An. de la Soc. Méd.-Quirurg. d. Guayas.* Guayaquil. 1924. Vol. 4. No. 7. [Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Feb. 1. Vol. 30. No. 2. p. 96.]

Dengue is present in Ecuador. Spirochaetes were demonstrated by dark ground illumination and Levaditi's stain in the serum, citrated blood, cerebro-spinal fluid and organs. They were 2–7 μ long, are considered to be the agents of dengue, and are called Leptospira asthenogen. Pfeiffer's reaction with the cultured organism is positive, and the patients' serum agglutinated this also. The leptospira is immunologically distinct from the *L. icterohaemorrhagiae.*

P W B-S

ROCKY MOUNTAIN FEVER.

Noguchi (Hideyo). **Cultivation of *Rickettsia*-like Microorganisms from the Rocky Mountain Spotted Fever Tick,** *Dermacentor andersoni.*—*Jl. Experim. Med.* 1926. Apr. 1. Vol. 43. No. 4. pp. 515–532. With 41 figs. on 4 plates. [12 refs.]

A systematic study of 74 ticks showed the presence in some instances of several types of organisms morphologically resembling the mature micro-organisms of spotted fever. The most frequently isolated were *Bacillus rickettsiformis* n. sp., less common *B. pseudoxerosis* n. sp. and *B. equidistans* n. sp. These organisms are non-pathogenic to guinea-pigs, rabbits and *Macacus rhesus.* Morphologically they resemble the forms found in smears and sections of the ticks, yet their presence had no relation to infectivity. Immunologically they are not related to the spotted fever virus. All these are pleomorphic under cultural conditions, and the question arises whether or not the minute non-pathogenic rickettsia forms and the somewhat coarse symbionts found in Dermacentor are morphologically variations due to differences in nutrition, oxygen tension, tissue reactions, etc., in the various tissues and cells in which the organisms are embedded. At all events, the differentiation of the non-pathogenic bodies from the pathogenic *Dermacentor rickettsia* is extremely difficult.

It is important to note that these non-pathogenic micro-organisms of ticks grow best at room temperature, resembling thus certain flagellates found in the alimentary tract of insects. There is always great difficulty in starting growth on artificial media (three special forms of which are described), after which gradual adaptation to less specialized media takes place. Possibly *B. rickettsiformis* is a non-pathogenic phase of the spotted fever organism, but this is very unlikely as it has no immunological characters.

P. W. Bassett-Smith.

PARKER (R. R.) & SPENCER (R. R.). **Rocky Mountain Spotted Fever. A Study of the Relationship between the Presence of Rickettsia-like Organisms in Tick Smears and the Infectiveness of the Same Ticks.**—*Public Health Rep.* 1926. Mar. 12. Vol. 41. No. 11. pp. 461–469. [2 refs.]

In continuation of researches on the etiology of Rocky Mountain fever a large number of infected and non-infected ticks (*Dermacentor andersoni*) both wild and specially reared were examined, and it was found that although a large percentage of infected ticks contained Rickettsia which were virulent, yet a few others with similar organisms were non-infective ; also in some known to be infective no Rickettsia could be demonstrated. The same conditions were found with wild ticks from known infected areas. A small proportion of wild ticks from supposed non-infected places were found to contain similar organisms. It is probable that there may be an avirulent phase especially in hibernating forms, which become "reactivated" after the tick has been fed

P. W. B-S.

BREINL (F.). Untersuchungen ueber die Immunität bei Rocky Mountains Spotted Fever. [**Researches in Immunity in Rocky Mountain Fever.**]—*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1926. Feb. 5. Vol. 46. No. 2. pp. 123–136. With 9 charts in text. [4 refs.]

The author used 77 guineapigs in groups of 4 or 5 in the experiments and the results are shown in 9 diagrams. The conclusions drawn are the following :—

1. Guineapigs may be rendered immune against Rocky Mountain fever by injecting simultaneously in various parts immune serum and living virus.
2. There are no symptoms during the process of immunization if the serum and virus are given in suitable proportions.
3. Immunity is thus obtained through the survival of the virus in the spleen.
4. If there is too little virus it is quickly destroyed without producing immunity. If there is too much, symptoms are produced in spite of the serum.
5. The virus binds the antibody in vitro. The sensitized virus is either killed in the organism or fever is produced after a long time.
6. Heating the immunizing serum for 45 min. at 60° C. reduces its power considerably.

7. Antibodies in any considerable quantity are found only after a previous attack of fever. Active immunity does not depend upon the antibody content of the blood.

P. W. B-S.

OROYA FEVER.

NOGUCHI (Hideyo) & BATTISTINI (Telémaco S.). **Etiology of Oroya Fever. I. Cultivation of** *Bartonella bacilliformis*.—*Jl. Experim. Med.* 1926. June 1. Vol. 43. No. 6. pp. 851–864. With 4 charts in text and 17 figs. on 3 plates. [7 refs.]

Working on the same lines as with Leptospira and Leishmania the authors were able to isolate and cultivate the *Bartonella bacilliformis* from the blood of a case of Peruvian " Oroya fever," the blood being sent in cold storage from Lima to New York. The culture was maintained in the laboratory, growing best at low temperature on semi-solid or blood agar media. The organism is an obligate aerobe, gram negative, at times motile ; beside the ordinary bacillary forms granular and coarsely irregular elements are met with. The inoculation experiments were successful only in Rhesus monkeys. Intravenous injections of cultures into young animals produce a long irregular fever of remittent type from which for many weeks the organism can be cultivated from the blood, being found in the red cells as in man. Intradermal injections into the eyebrow of young macaques gave rise to nodular forms, rich in blood vessels showing the bacillary organism in the endothelial cells ; from these nodules the organism is readily recovered. Excellent plates show the morphology of the organism, some with giant involution forms, blood films, tissue cells, etc., and two coloured plates show the nodules on the face of *Macacus rhesus**. It is noted that all filtration experiments were negative.

P. W. Bassett-Smith.

UNCLASSED FEVERS.

MEDICAL AND SCIENTIFIC ARCHIVES OF THE ADELAIDE HOSPITAL No. 4. (Supplement to the Ann. Rep. of the Adelaide Hospital for 1924.). pp. 10–16.—**Further Cases resembling Endemic Typhus Fever (Brill's Disease).**

The clinical characters of 8 cases of the condition are described from the period January to July, 1924. There was one death due to disease of the coronary artery. The laboratory report states that good Weil-Felix reactions were obtained in all, but as a 1/40 titre was found to be not absolutely reliable an agglutination above this was required for a positive result. It is stated that all bloods sent for Widal tests were put up for the former test as a routine and that 93 so done were negative.

P. W. Bassett-Smith.

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*The coloured plate of nodules on the brow of *M rhesus* developing after the injection of cultures resembles closely the plate given by STRONG and others of " verruga inoculata in the monkey." Clearly the view expressed by that Expedition on the relations between Oroya fever and verruga peruana will have to be reconsidered. [See this *Bulletin*, Vol. 7, p 70]—Ed.

WHEATLAND (F. T.). **A Fever resembling a Mild Form of Typhus Fever.**—*Med. Jl. Australia.* 1926. Mar. 6. 13th Year. Vol. 1. No. 10. pp. 261–266. [12 refs.]

It is stated that in the Toowoomba and St. Vincent hospitals there were, in 1925, as many as 38 cases of a 12–14 day fever, which were very similar to those described by HONE in Adelaide. The rose-red macular rash appeared on the 5th to 7th day. 36 Weil-Felix tests were made, and all were positive. The mortality was very low. The disease could not be traced to lice, and it was not contagious. Guinea-pig inoculations were all negative. It is stated that mice on the farms in the district where the fever cases came from were found dying off in large numbers. The disease locally was known as " Mouse fever."

P. W. B-S.

HOLMES (M. J.) & RICHARDSON (A.). **An Outbreak of Typhus-like Disease on a Sailing Vessel.**—*Health.* Melbourne. 1926. Jan. Vol. 4. No. 1. pp. 20–27. With 2 charts in text. [2 refs.]

The authors report a small epidemic of fever with a rash, in a sailing ship, affecting 6 men out of a crew of 24. The first case occurred 38 days after leaving Tristan da Cunha, the only place called at after leaving New Brunswick 112 days before. There was no disease on the island ; some of the natives came on board for one hour, and brought a sheep, some geese and chickens. In 4 of the cases the disease lasted from 5 to 8 days, and these were all well on the arrival of the ship at Melbourne. Two were seriously ill and one died in hospital ; both had a macular rash, broncho-pneumonia and prolonged fever of about 30 days. The onset, course, symptoms and signs very strongly suggested a " typhus-like fever ". The serum of those tested gave no reaction for enteric group, but the Weil-Felix test was positive. No etiological cause could be traced by the M.O.H. of Melbourne, but bed bugs were present throughout the voyage.

[No reference is made to sheep ticks, which might possibly have been brought on board and have been carriers of a germ for which the residents had acquired immunity.]

P. W. B-S.

MATTLET (G.). Deux cas de fièvre diagnostiqués septicémies après hémoculture. **[Two Cases of Fever diagnosed Septicaemic after Blood Culture.]**—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 137–140.

Referring to the tendency to relate all cases of fever in the tropics to tropical causes the author describes two cases of fever, more or less prolonged, from which blood cultures demonstrated : (1) a gram-positive diplococcus morphologically like *D. crassus*, not pathogenic to rats ; this agglutinated with the patient's serum up to 1/300 but not with normal serum. It is commonly isolated from the pus in meningitis. (2) A short non-haemolytic streptococcus which injected into rabbits gave rise to a transient erysipelas. This case was successfully treated with intravenous injections of electrargol.

P. W. B-S.

ROW (Y. S.). **A Case of Fever due to the** *Bacillus faecalis alkaligenes.*—*Indian Med. Gaz.* 1926. June. Vol. 61. No. 6. pp. 289–290. With 1 chart in text. [2 refs.]

Comparatively few cases of fever clearly attributable to *B. faecalis alkaligenes* have been recorded. In the present instance a man aged 32 was admitted from the Alipuram jail, Bellary, with a history of four days fever, headache, malaise and mild diarrhoea. The fever lasted 15 days and the general condition was that of a typhoid patient. The blood showed no parasites nor agglutination for T.A.B. or C. in any dilution. *B. alkaligenes* was isolated from the faeçes and was agglutinated by the patient's serum, but no details as to titre or attempt at isolation from the blood are given.

P. W. B-S.

WERNER (Heinrich). Uber Fünftagefieber (Febris quintana). **[Five Day Fever.]**—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Vol. 30. No. 1. pp. 194–203. [16 refs.]

This is almost entirely an historical account of what is known with us as Trench fever. The author states it is the tenth anniversary of his description of the fever, which is really an old and well known disease. In 1916 he failed to transmit the virus by intravenous injections of blood, but succeeded with intramuscular. After the introduction of ·5 cc. the infection developed in 20–23 days. In the discussion the applicability of the term " febris quintana " was debated.

P. W. B-S.

HELMINTHIASIS.

JOYEUX (Ch.). L'helminthiase intestinale dans les colonies françaises. Prophylaxie et traitement d'après les récents travaux. [**Intestinal Helminthiasis in the French Colonies. Prevention and Treatment.**] —*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 3. 3a, 4a e 5a Sessões.) 1923. Aug. No. 4. pp.41–55.

The prevalent helminth infections in the French Colonial possessions are Ancylostomes, Ascaris and Trichiuris. Statistics give the incidence in soldiers, prisoners and hospital patients only. *Hymenolepis nana* is very rare. The eggs of *Oxyuris vermicularis* are rarely found in the stool. Other helminth parasites noted are rare cases of *Dipylidium caninum* in French Guiana, *Gastrodiscoides hominis* in Cochin-China and *Taenia saginata* in Sud-Oranais (Algeria). In dealing with the diagnosis of ancylostome infection, it is remarked that the number of eggs may differ in a stool according to its consistency. The hookworm larvae can migrate not more than 10 cm. in a horizontal direction, but vertically the distance covered may be much more. Larvae of Drosophila may play an important rôle in the destruction of larvae. In treatment, repeated dosing with thymol is recommended. The author's results show 86·5 per cent. of successful cures. Preliminary dieting is valueless and may even be harmful, but it is useful during the treatment. The author strongly recommends carbon tetrachloride—it may be administered in a spoon with a small amount of water spread over it to prevent inhalation. As a purge magnesium sulphate is used.

R. T. Leiper.

ESPIÉ (A.). Enquête sur l'helminthiase humaine dans la région Sfaxienne. [**Human Helminthiasis in the District of Sfax, Tunis.**] —*Arch. Inst. Pasteur de Tunis.* 1925. Dec. Vol. 14. No. 4. pp. 450–461.

The following parasites have been found to occur in Sfax, Tunis: Ascaris, Whipworms, Oxyuris, *Hymenolepis nana*; Ancylostomes. The author was unable to determine the species of Ancylostome present, but he regards this as the first record of hookworms from this area.

T. W. M. Cameron.

DAUBNEY (R.). **Some Recent Advances in Medical Helminthology.**—*Kenya Med. Jl.* 1926. May. Vol. 3. No. 2. pp. 33–45.

In East Africa helminth infection is undoubtedly an important factor in the morbidity of the native population and is a certain source of trouble not infrequently to the European settler, but the comparative importance of the various helminths as they affect the public health of Kenya has yet to be decided. The paper read by Mr. R. Daubney, M.R.C.V.S., to the local branch of the British Medical Association summarizes with, on the whole, commendable accuracy the recent advances which have taken place in medical helminthology in various parts of the world and should stimulate local medical men to take a deeper interest in the natural history aspects of their clinical work. In this connexion it is noted that an examination of the faeces of the natives in a reformatory in Kenya, carried out in conjunction with Dr. J. A. CARMAN, revealed hookworm in over 56 per cent. and an infestation of *Taenia saginata* in 15 per cent. of the inmates. From studies on the action of carbon tetrachloride in sheep, the author finds that magnesium sulphate is a valuable adjunct, reducing to nil the mortality in these animals from 33 per cent. when the drug was used alone.

R. T. L.

YAMAZAKI (S.). **On the Eggs of Parasites found in Human Stools, especially those of** *Clonorchis sinensis*, **in Taihoku and Neighbourhood.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1925. Dec. No. 249. English summary pp. 6–7. [In Japanese.]

Yamazaki examined 555 persons—mostly Japanese—and found 161 to be free from helminths. 46 per cent. were infected with Whipworms, 35 per cent. with Ascaris, 13 per cent. with Ancylostoma and small numbers with Clonorchis, Metagonimus, Oxyuris, Strongyloides and *Trichostrongylus orientalis*. He believes that a certain percentage of the clonorchis infections was contracted locally.

T. W. M. C.

LUGER (A.). Zur Symptomatologie und Therapie der Eingeweidewürmer. [**Symptomatology and Treatment of Intestinal Worms.**] —*Mitt. d. Volksgsndhtsamt.* Vienna. 1925. Nov. 30. No. 11. pp. 503–510.

This paper deals with the helminth infections met with in Austria by the general practitioner, viz.: *Taenia saginata, T. solium,* Echinococcus, *Trichuris trichiura, Ascaris lumbricoides* and *Oxyuris* [*Enterobius*] *vermicularis*. An eosinophilia of 8 to 10 per cent. is not uncommon. In Oxyuris it may rise to 16 per cent. and in Ascaris to 19 per cent. Unusually high percentages occur in the cases of trichinosis, ancylostomiasis and echinococcus. In a mixed infection of whipworm, Ascaris and Oxyuris the author found the percentage to be 33 per cent. In Serbia in 1916, however, the author with KARMELIC noted that 100 per cent. of the war captives examined harboured worms, but many showed little or no eosinophilia and in some cases there was actually an abnormally low percentage. In discussing symptomatology, the author refers to the possible rôle of the worms in introducing bacteria of pathogenic nature, and the discussion on therapy is illuminated by a series of prescriptions for the administration of santonin, thymol, beta-naphthol, and chenopodium, but the success of these is to be inferred. The presence of occult blood in the stool of patients harbouring Trichocephalus should always be kept in mind, as a wrong diagnosis of carcinoma or gastric or duodenal ulcer may be reached if one has failed to search also for the eggs of the whipworm.

R. T. L.

KALANTARIAN (E. W.). Zur Kenntnis der Helminthenfauna der Kinder Armeniens nach den Ergebnissen der helminthenovoskopischen Untersuchungen. [**The Helminth Fauna of Armenian Children.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Feb. 1. Vol. 30. No. 2. pp. 76–86.

The author examined 1,028 children and young adults in Armenia during the first six months of 1925, and found that 1,006, or 97·9 per cent., were harbouring helminthic parasites of one kind or other. The main body of the paper is occupied by detailed findings on the different groups taken, the worms present and the combinations in which they occurred, but the following is a summary of the total findings. *Trichuris trichiura* proved to be the most frequent, 91·2 per cent. in all; in some of the groups this figure reached 100. The next commonest was *Ascaris lumbricoides*, 78·9 per cent. Others were relatively uncommon, *Trichostrongylus instabilis* being found in 181 or 17·7 per cent.; *Enterobius vermicularis* in 7·8 per cent.; *Hymenolepis nana* in 4 per cent.; *Taenia saginata* in 2·9 per cent.; and hookworm in 11 cases only. *Cysticercus cellulosae* was found in pigs, but not a single instance of human infection by *T. solium* was encountered.

H. Harold Scott.

SKRIABIN (K. I.). **The Results of Expedition to the Study of Helminthiasis Diseases in Coalminers in Don Miners Districts. (Preliminary Reports.)**—*Russian Jl. Trop. Med.* Moscow. 1925. No. 1–2–3. English summary p. 73. [In Russian pp. 57–60.]

Skriabin has examined the faeces of 7,500 miners in the Don district, and was unable to find any cases of hookworm. The parasites found were whipworms (71 per cent.), *Ascaris* and *Enterobius*, *Taenia saginata*, *Dibothriocephalus* and *H. nana*; *Fasciola hepatica*, *Dicrocoelium lanceatum* (21 times) and *Opisthorchus felineus* are also reported, while on 8 occasions he found a new *Rhabditis*.

T. W. M. C.

DE RIVAS (D.). **The Effect of Temperature on Protozoan and Metazoan Parasites, and the Application of Intra-Intestinal Thermal Therapy in Parasitic and other Affections of the Intestine.**—*Amer. Jl. Trop. Med.* 1926. Jan. Vol. 6. No. 1. pp. 47–73.

Finding that helminths and other parasites are easily destroyed *in vitro* by heat, de Rivas has tried the effect of duodenal or colonic lavages with salt solution or magnesium sulphate at a temperature of 44°-47° C. for *Oxyuris*, *Taenia saginata* and hookworms. He suggests the application of the technique to non-parasitic infections of the intestine.

R. T. L.

LAMBERT (S. M.). **Tests with Tetrachlorethylene: a New Anthelmintic.**—*Med. Jl. Australia.* 1925. Dec. 19. 12th Year. Vol. 2. No. 25. pp. 699–700.

Tetrachlorethylene, C_2Cl_4, was said to have a pleasanter taste and odour than carbon tetrachloride and to be equally potent and safe. The author obtained a purified product for trial and states that it has a very pungent, acrid odour. He found that 4 cc. were needed for satisfactory anthelmintic effect and that it possesses no advantages over the tetrachloride, either as regards efficiency, taste, or odour.

The contraindications to its employment are the same as for the tetrachloride and, like the latter, it has a selective action on the female Necator.

H. H. S.

SCHLINGMAN (A. S.). **Miscellaneous Tests of Tetrachlorethylene, a New Anthelmintic.**—*Jl. Amer. Vet. Med. Assoc.* 1926. Mar. Vol. 68. N.S. Vol. 21. No. 6. pp. 741–754. [7 refs.]

Schlingman has conducted a series of experiments with tetrachlorethylene on various animals and finds that it is as effective for dogs when given in hard capsules as in soft. It can be used safely for cats, foxes, sheep (including pregnant ewes), cattle and horses. It has no action against tapeworms in any of these animals but is very effective against blood-sucking worms in these hosts It should be tested cautiously in man on account of its high safety and effectiveness in animals.

T. W. M. C.

SUCHANKA (Franz). Vergiftung und Tod nach einer Wurmkur mit Oleum Chenopodii [**A Fatal Case of Chenopodium Poisoning.**] —*Mitt. d. Volksgsndhtsamt.* Vienna. 1926. Jan. 31. No. 1. pp. 14–16 also in *Wien. Klin. Woch.* 1926. Feb. 4. Vol. 39. No. 6. pp. 160–162

A girl, 20 years of age, was given for Ascaris infection a mixture of oil of chenopodium and peppermint, with directions to take 10–15 drops three times a day for two days, and them to allow a fortnight to elapse In order to obtain greater effect she took but little food. She appears to have waited only 6 days and then taken more Soon afterwards she complained of giddiness, singing in the ears and a feeling of intoxication In a few minutes she vomited and fell to the floor unconscious The face was flushed, respiration slow The next day the temperature rose to 39° C, the pulse was strong and regular and slow relatively to the temperature. The pupils reacted sluggishly Convulsions supervened, involving at first the right side of the body and later giving place to flaccid paralysis There was albuminuria On the fifth day the pulse increased in rapidity till it became uncountable and death took place with signs of cardiac failure and oedema of the lungs

The remainder of the paper is occupied by brief accounts of cases previously recorded. The second paper is a verbatim copy of the first

H. H. S.

DOLLFUS (Robert Ph.). Distomiens parasites de *Muridae* du genre *Mus.* [**Trematodes Parasitic in the Genus** *Mus.*]—*Ann. Parasit. Humaine et Comparée.* 1925. Jan. & Feb. Vol. 3. Nos. 1 & 2. pp. 85–102; 185–205. With 16 figs. [29 refs.]

In nature species of the genus *Mus* harbour trematodes which can also parasitize man and they can be experimentally infected with trematodes of which normally man is the definitive host. It is therefore permissible to consider these rodents as agents in the spread of the human infections. These conclusions are supported by the following list of the species so far recorded :—

Mus (*Mus*) *musculus* Linné, 1758.	*Distoma musculi* Rudolphi, 1819
Mus wagneri Eversmann, 1848, *rotans* Droogleever Fortuyu, 1912 (jap. *nankinnézumi*) (variété de *M. musculus* L.),	*Lepoderma muris* Tanabé, 1922.
Mus (*Mus*) *sylvaticus* Linné, 1758.	*Distoma recurvum* Dujardin, 1845. *Distoma vitta* Dujardin, 1845.
Mus (*Epimys*) *rattus* Linné, 1758 (jap. *Kumanézumi*, *iyénézumi*).	*Echinostoma macrorchis* Ando et Ozaki, 1913. *Echinostoma aegyptiaca* Khalil et Abaza, 1924. *Clonorchis sinensis* (Cobbold, 1875) *Lepoderma muris* Tanabé, 1922. *Exorchis oviformis* Kobayashi, 1915. *Macroorchis spinulosus* Ando, 1919.
Mus (*Epimys*) *norvegicus* Erxleben, 1777 (=*decumanus* Pallas, 1778) (jap *mizonézumi*, *dobunézumi*, *shironézumi*, *shichironézumi*, *daikokunézumi*).	*Echinostoma cinetorchis* Ando et Ozaki, 1923 *Echinostoma gotoi* Ando et Ozaki, 1923 *Echinostoma macrorchis* Ando et Ozaki, 1923 *Echinoparyphium japonicum* Ando et Ozaki, 1923. *Echinostoma spiculator* Dujardin, 1845.
Mus (*Epimys*) *norvegicus* Erxleben, 1777 (= *decumanus* Pallas, 1778 (jap *mizonézumi*, *dobunézumi*, *shironézumi*, *shichironézumi*, *daikokunézumi*) (suite).	*Heterechinostoma magnovatum*. Stunkard et Haviland, 1924. *Clonorchis sinensis* (Cobbold, 1875). *Lepoderma muris* Tanabé, 1922. *Ascocotyle* (*Parascocotyle*) *diminuta* Stunkard et Haviland, 1924. *Distoma* sp. B. Podiapolsky, 1924.
Mus (sp. ?) (jap. *nonézumi*).	*Schistosoma japonicum* Katsurada, 1904. *Clonorchus sinensis* (Cobbold, 1875).

[Of the above forms, only *Clonorchis sinensis* and *Schistosoma japonicum* are parasites of man, and of these the bilharzia worm would alone appear to be possibly spread to any extent by rodents.]

R. T. L.

FAUST (Ernest Carroll). **Further Observations on South African Larval Trematodes.**—*Parasitology*. 1926. Jan. Vol. 18. No. 1. pp 101–127. With 2 plates and 1 text fig. [35 refs.]

In addition to describing several new species of cercariae from South Africa, Faust returns to the morphological differences between human schistosome cercariae (this *Bulletin*, Vol. 17, p. 55). He believes that these essential differentiating features lie in the number and microchemical reactions of the secretory cells which should be examined in the fresh state as well as preserved. Re-examination of his Venezuelan material of *S. mansoni* from *P. guadeloupensis* confirms the presence of four pairs of basophilic cells, and he suggests that the material examined by KHALIL (this *Bulletin,* Vol. 20, p. 220) from *P. boissyi* may not be *S. mansoni.* He has also restudied his South African material—which he believes to be *S. haematobium*—and finds that although he had originally described only three pairs of acidophilic cells, there are present two pairs of acidophilic and three pairs of basophilic glands. He states that freshly prepared *toto* mounts show a picture similar to that originally described by himself, but that in slides which have been preserved for a year or more, five pairs of glands, as described by BLACKLOCK and THOMPSON (this *Bulletin,* Vol. 21, p. 941), are present. He gives a table for the identification of these cercaria, the more important points of which are :—

Schistosoma.	*S. haematobium.*	*S mansoni*	*S. japonicum*
Glands	2 pairs with large nuclei and granular acid protoplasm.		5 pairs
	3 pairs with basophilic protoplasm.	4 pairs.	5 pairs.
Duct openings.	5 pairs	6 pairs	5 pairs.

[Faust had not seen the paper by BETTENCOURT and DE SILVA (this *Bulletin,* Vol. 22, p. 868) when the present paper was written.]

T. W. M. C.

CAWSTON (F. G.). **Environmental Influences which favour the Development and Spread of the Bilharzia Parasite in South Africa. Food Supply of "Physopsis."** —*Jl. Trop. Med. & Hyg.* 1926. Mar. 15. Vol. 29. No. 6. pp. 89–91.

Cawston finds that the favourite food of *Isidora africana* or " Physopsis," which is the common carrier of Bilharzia in South Africa, is leaves of the lotus and similar plants. In pools containing these, domestic ducks are useful to destroy the snails. There is a danger to the inhabitants of Durban from vegetable infections, transmitted from such pools by Indians. He has been unable experimentally to infect *L. natalensis* with *S. haematobium.*

T. W. M. C.

CLAPIER. La bilharziose chez le tirailleur sénégalais. [**Bilharziasis in the Senegalese Tirailleur.**]—*Ann. de Méd. et de Pharm. Colon.* 1926. Jan.–Feb.–Mar. Vol. 24. No. 1. pp. 56–67. [2 refs.]

The extent of bilharziasis in coloured troops in tropical Africa is still incompletely known. Clapier has examined two regiments especially for urinary bilharziasis and finds an infection of over 6 per cent. He draws attention to the dangers of the disease being disseminated through the movements of troops.

T. W. M. C.

GIBSON (R. W. B.). **Bilharzia Disease of the Female Genital Tract.**—*S. African Med. Rec.* 1925. Sept. 26. Vol. 23. No. 18. pp. 413–414.

In women bilharziasis is less common than in man, not because of sex, but owing to other circumstances such as occupation. At the vulva the disease is most frequently of the hypertrophic type. Warty, papillary or polypoid growths often reach considerable size and can only be distiguished microscopically from venereal warts. In other cases deep ulcers destroy the hymen and clitoris. Papillary growths at the edge of these ulcers may cause them to be mistaken for carcinoma. Within the vagina the common lesion is sclerosis, the mucosa being much thickened and thrown into folds, with a wet sand appearance, easily bled. The cervix when affected has a close resemblance to carcinoma, taking the form of polypoid excrescences or small fibro-adenomatous tumours. Bilharzia infection of the uterus is unknown to the author. A case is briefly described of isolated affection of the fallopian tubes occurring in a woman who had spent the early years of her life in Durban.

R. T. L.

LEFROU (G.). Note sur la bilharziose en Afrique Equatoriale Française. [**Bilharziasis in French West Africa.**]—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 3. 3a, 4a e 5a Sessões.) 1923. Aug. No. 4. pp. 135–139. [1 ref.]

In French Equatorial Africa the author has studied the local incidence of bilharziasis. He concludes that many of the cases are recent importations by the railway. The main focus is at Tchad, which is in constant communication with the Sudan by caravan. In the other regions only isolated cases occur. Planorbis and Limnaea are common in the whole region, but in spite of this fact bilharziasis is limited to the Tchad region. The author rightly comments on the loose use of the terms intestinal and urinary bilharziasis and suggests that in every case the name of the causal agent be appended, so that it may be clear if *S. haematobium* or *S. mansoni* be concerned.

R. T. L.

DUPUY (L.). Sur un cas de bilharziose intestinale à *Schistosoma haematobium.* [**Case of Rectal Bilharziasis due to** *S. haematobium.*]—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 37–39.

Infestation by *Schistosoma mansoni* is not uncommon in Katanga, but no urinary infestation by *S. haematobium* has been noted there. The author records the presence of eggs of the latter in the faeces of a patient who came under treatment for amoebic dysentery. The amoebae were cleared by five injections of emetine, but the mucoid, blood-streaked stools persisted and terminal-spined ova were found in abundance, and an occasional hookworm egg. The urine was quite normal. Two intravenous injections of 0·10 cgm. of emetine were given, and thymol for the hookworm. Daily examinations for the next 3½ weeks failed to find any more ova. Since so small an amount of emetine seems inadequate to have brought about the death of the trematode the author asks whether the combination of emetine and thymol may not have been responsible for the result.

H. H. S.

MERSCH Un cas de bilharziose vésicale chez l'Européen au Katanga. [**A Case of Vesical Bilharziasis in a European in Katanga.**]—*Ann Soc. Belge de Méd Trop* 1926 Jan Vol 5 No 2 pp 197–199.

Mersch records what he belives to be the first case of vesicular bilharziasis in a European in the Belgian Congo The case was successfully treated with emetine

T W M C

CUTLER (Max) **Bilharziasis in the United States and Canada. Report of a Case.**—*Jl Amer Med Assoc* 1926 Mar 20 Vol 86 No 12. pp 816–818 With 2 text figs [13 refs]

Cutler records the finding of the ova of *Schistosoma haematobium* in an Italian who had entered the United States ten years previously Haematuria was noted for the first time a year after entry, but the general health was good The ova were found in small numbers mostly embedded just below the epithelial layer of the bladder wall

T W M C

PODZUN (Bruno) Ueber einen Fall von Bilharziosis bei einem ehemaligen Kriegsteilnehmer [**A Case of Bilharziasis in a Discharged Soldier.**]—*Arch f Schiffs u Trop Hyg* 1926 Jan 8 Vol 30 No 1 p 35

A man from East Prussia presented himself for treatment on account of increasing weakness He was found to be anaemic and examination of the urine revealed ova of *Schistosoma haematobium* He had served throughout the war in Russia Macedonia and Palestine in the last of which the infection had probably been contracted No further details are given

H H S.

FRANÇA (Carlos) Profilaxia da bilharziose [**Prophylaxis of Bilharziasis.**]—*Revista Med de Angola* (No especial 1e Congresso de Med Trop da Africa Ocidental Vol 3 3a 4a e 5a Sessões) 1923 Aug No 4 pp 111–134 With 2 plates [2 refs]

During treatment with tartar emetic administered according to CHRISTOPHERSON'S technique, the changes observed in the eggs passed in the urine were noted

Some eggs, containing contracted embryos, were of normal outline with a spine, but the embryo appeared to be a spherical structureless mass The embryo had apparently reached full development, but had been killed by the antimony. Other granular eggs were small, usually without spine but provided with a prominence A third type of egg was shrivelled, smaller than normal, with folded shell, usually no embryo could be detected These eggs appeared on the first day of treatment and gradually increased in number It is suggested that the granular eggs are prematurely laid, and their increase in number is a good sign, as the tartar emetic apparently acts as an abortifacient.

R. T L

LAMPE (P. H. J.). **Bilharzia Treatment. Experience gained from more than 3,000 Tartar Emetic Injections. Precautionary Measures. Results obtained.**—*Jl. Trop. Med. & Hyg.* 1926. Jan. 1. Vol. 29. No. 1. pp. 4–10. With 4 text figs. [69 refs.]

The author has examined the population of various agricultural centres in Surinam and Paramaribo and finds that a large proportion is infected with schistosomiasis. In Kwatta, of 432 examined, 105 were infected, or 24·3 per cent.; in Charlesburg, an outlying district of Paramaribo, 31 out of 62. His first results of treatment by tartar emetic were not satisfactory, owing to impure preparations or to insufficient dosage. With the use of a purified product and adequate doses the results greatly improved. For outpatients, after three injections of 3 cc., 5 cc. and 7·5 cc. of a 1 per cent. solution, 8–10 cc., were given thrice weekly, and a total of 150–200 cc., the whole course occupying 6–7 weeks. For children, the dosage was proportionally reduced For inpatients the treatment was more intensive, namely, 8–10 cc., six times weekly, after three smaller injections, the total being 200–240 cc. in 4–5 weeks.

Notes were kept of any disturbances, but few were of any moment. Mention is made of transient rheumatic pains, a troublesome cough just after injection, an inclination to vomit, and headache. Itching, urticaria and oedema are ascribed to anaphylaxis resulting from the large numbers of parasites destroyed. Of 326 patients undergoing the complete course 108 were discharged cured and careful examination for some months has not revealed any return of ova. The author finds that the total amount of the drug needed varies widely for different individuals, and he doubts, therefore, whether it is right to inject all patients with the fixed 200 cc. If the patient is suffering, in addition, from the effects of ancylostomiasis, the anaemia due to the latter should be cured before the antimony course is entered upon.

H. H. S.

LAMPE (P H. J.). Bilharzia-behandeling. Ervaringen met ruim 3,000 tartarus-emeticus-injecties. Te nemen voorzorgen Bereikte resultaten. [**Bilharzia Treatment. Experience with over 3,000 Injections of Tartar Emetic. Precautions. Results.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1926. Vol. 66. No. 2. pp. 171–184. [69 refs.]

Tartar emetic is not a harmless drug. Many of the awkward sequels, however, may be ascribed to impurities. Lampe therefore quotes the tests of purity to which tartar emetic for intravenous injections should respond, these should be consulted in the original. He recommends the dosage according to CHRISTOPHERSON (25–30 gr in 6–7 weeks). The results were very favourable. In every case in which the full course of treatment could be carried out disappearance of the parasites was attained. The Bilharzia *carrier* can always be cured, and this should be kept in mind, because the anatomical lesions of the Bilharzia *sufferer* are often incurable. The author is in doubt whether the dosage required by CHRISTOPHERSON is always necessary and is trying to find a criterion of the healing of the infection, to enable the physician to stop the cure at an earlier moment. He suggests that the eosinophilia (50–80 per cent.) which appears at a certain moment during the cure may be brought on by the death of great numbers of parasites, with subsequent entry of foreign protein in the circulation resulting in anaphylaxis. Further experiments, however, are still required to confirm this opinion.

W. J. Bais.

CAWSTON (F. G.). **Intravenous Injections of Tartar Emetic in Bilharziasis.** [Letters, Notes and Answers.]—*Brit. Med. Jl.* 1926. Mar. 6. p. 462.

Cawston considers that unless very large doses of emetine, in the treatment of bilharziasis, are employed, it is necessary to continue the treatment uninterruptedly for at least 24 days, but that cardiac depression, which so often occurs during the third or fourth weeks, makes emetine risky. Rectal injections of tartar emetic are unsatisfactory, as the amount absorbed by the bowel cannot be estimated. Cawston considers that the method of choice is intravenous injections of tartar emetic provided the patient is carefully observed during the treatment.

R. T. L.

ANDERSON (J Barcroft) **Rectal Injection of Tartar Emetic for Bilharziasis.** [Memoranda]—*Brit Med Jl* 1925 Oct 17 p 700

Anderson considers that the "simplicity, safety, convenience and efficiency" of rectal injections of tartar emetic appear to make its intravenous injection no longer necessary.

R T L

BRITISH MEDICAL JOURNAL. 1926. Mar. 20. p. 554. [Letters, Notes, etc] **Rectal Injection of Tartar Emetic for Bilharziasis.** [DYE (William H) ; LATHAM (D. V.)]

Small children can take up to 16 grains of tartar emetic by the rectum without toxic effects, but as the amount of the drug absorbed is unknown the use of hypodermic injections is preferred. Latham found rectal injections with tartar emetic quite unsatisfactory and without effect on a patient who was a typical case for treatment.

R. T. L

LAMPE (P. H. J.). Bilharziosis in Suriname. [**Bilharziasis in Surinam.**]—*Geneesk. Tijdschr. v. Nederl.-Indie.* 1925. Vol. 65. No. 5. pp. 546–560. 4 figs on 2 plates. [49 refs.]

Since FLU in 1911 reported cases of bilharziasis in Surinam, the disease has repeatedly been met with and may be said to be far from rare. The schistosome is *S. mansoni*. The author promises further details on the biology of the transmitting snails and on the spread of the disease in Surinam, but gives now some figures about the number of cases observed at the Military Hospital (92 in 1923) and quotes a few cases of special interest, one in which the anatomo-pathological findings closely resembled miliary tuberculosis and another with disseminated myocarditis caused by eggs of *S. mansoni*. The last mentioned localization of the ova is so far unknown.

W. J. Bais.

MACIEL (Heraldo). Algumas notas sobre a postura do " Schistosomum mansoni." [**Notes on the Behaviour of** *S. mansoni.*]—*Sciencia Medica.* 1924. Aug. 31. Vol. 2. No. 8. pp. 419–425. With 1 fig. [21 refs.]

From a daily examination of the faeces the author finds that, as a rule, the elimination of eggs in cases of bilharzia due to *S. mansoni* stops suddenly during treatment with tartar emetic or emetine. This stoppage frequently occurs even prior to the completion of the course of treatment. It happens, too, in cases where an intensive method of cure has been applied. There is also marked variation in the daily output of eggs in infected persons and a seasonal variation appears probable, the number of eggs eliminated in winter being much greater than in summer.

R. T. L.

MACIEL (Heraldo). Algumas notas em torno do tratamento da Schistosomose Intestinal. [**Treatment of Intestinal Schistosomiasis.**]—*Sciencia Medica.* 1925. Jan. 31. Vol. 3. No. 1. pp. 37–59. With 6 figs. and 2 plates. [43 refs.]

Neither " 914 " nor methylene blue is efficacious in the treatment of *Schistosoma mansoni* infection. Tartar emetic and emetine are accepted as proved remedies. For intestinal schistosomiasis the most convenient dose in the author's opinion is one giving 0·95 gm. as a total for a series of 10 injections. The initial dose being 0·05 gm. and the other nine injections of 0·1 gm. each. The emetine necessary for a cure amounts to 0·6 gm. for 10 injections, viz. 0·04 gm., 0·05 gm., 0·06 gm., 0·06 gm., 0·06 gm., 0·07 gm., 0·07 gm., 0·07 gm., 0·07 gm. Emetine should be reserved for use in those cases which are intolerant of tartar emetic. Adrenalin in water, by the mouth, is recommended as a preventive of accidents where there is intolerance.

R. T. L.

FORNARA (L). Emploi de l'émétique par voie rectale dans la Schistosomiase Mansoni. [**Rectal Use of Tartar Emetic in Rectal Schistosomiasis.**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Apr. Vol. 6. No. 1. pp. 49–52.

Fornara has used tartar emetic intra-rectally in nine cases of rectal bilharziasis. No untoward results were observed, and in eight of the cases eggs disappeared from the stools. He used a total dosage of 1–2·5 gm. in 5–7 daily injections, and considers the treatment promising.

R. T. L.

MELENEY (Henry Edmund), FAUST (Ernest Carroll) & WASSELL (Corydon McA.). **A Study of Intensive Antimony-Therapy in Schistosomiasis Japonica.**—*Jl. Trop. Med. & Hyg.* 1925. Apr. 15. Vol. 28. No. 8. pp. 153–165. With 6 figs. and 2 charts in text. [11 refs.]

While the use of tartar emetic in Egyptian schistosomiasis is now an established practice, in oriental schistosomiasis it is still on trial. A series of seven inpatients, suffering from a moderately severe attack, were treated and studied for the effect of the drug, which was administered about the rate of 2 gm. spread over two months. Eggs ceased to appear after an average of 22 days in routine faecal smears; miracidia were hatched up to the 32nd day until 1·32 gm. had been injected. The writers consider that 1½ gm. is probably sufficient for the cure of moderate cases. In their series it caused marked improvement and probably cured the condition. They recommend that the drug be used for incipient cases and those in the secondary stage of the infection, but caution is necessary in cases with advanced cirrhosis and ascites.

R. T. L.

TAI (J. T.). **Treatment of** *Schistosoma Japonica.*—*Nat. Med. Jl. China.* 1925. June. Vol. 11. No. 3. pp. 158–165.

The results obtained in the treatment of schistomiasis japonica with sodium antimony tartrate, colloidal antimony preparations and emetine leads the author to conclude that colloidal antimony is less efficient than sodium antimony tartrate, which is of definite value. Emetine treatment is definitely indicated whenever there is any difficulty in intravenous injections, especially in children. Prolonged use of antimony has always some potential danger, especially in advanced cases; with emetine the author has not hitherto had bad effects using ½ gr. tablets twice daily. Practically none of the very advanced cases were cured by any sort of treatment and very few of them improved. Eggs sometimes reappear several days after cessation. In one case negative faecal examinations were recorded until the seventh day. The author recommends a continuous watch of the faeces for two weeks.

R. T. L.

KAWAMURA (R.) & KASAMA (Y.). **Studies on Experimental Rickets. I. The Occurrence of Rickets in Young Rabbits born of Mothers infected with** *Schistosomum japonicum.*—*Jl. Experim Med.* 1925. Dec. 1. Vol. 42. No. 6. pp. 793–798. With 9 figs on 2 plates. [9 refs.]

BYFIELD & DANIELS (1923) found it possible to induce gross rickets in experimental animals by faulty diet only up to the second generation. The authors show that the young born of rabbits affected experimentally with *Schistosoma japonicum* develop typical rickets. Rickets can also be produced by infecting young healthy rabbits. Since, however, a similar result can be obtained in the offspring by feeding the mother on egg-yolk the causal action is not limited to the toxin of this parasite. The schistosome toxin may disturb the calcium and phosphorus metabolism of bone in young animals especially during the period of vigorous growth from 20 to 40 days after birth or it may exhaust some important element in the calcium and phosphorus metabolism such as the vitamins A and D.

R. T. L.

DESAGE. Un cas de distomatose humaine. [**A Case of Distomiasis in Man.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1926. May 6. 3rd Ser. Year 42. Vol. 50. No. 15. pp. 720–722. [2 refs.]

Desage records a case of *Fasciola hepatica* (diagnosed from the ova in the stool) in a patient in Oran [Algeria]. He considers that cases are probably commoner than is generally supposed but are not diagnosed.

T. W. M. C.

PORTER (Annie). *Limnaea truncatula* **as an Intermediate Host of** *Fasciola hepatica* **in South Africa.**—*S. African Jl. Sci.* 1925. Nov. Vol. 22. pp. 309–310.

Porter finds, in addition to *Limnea natalensis* and *Isidora tropica*, that *Limnea truncatula* is a host of *Fasciola hepatica* in South Africa. She records the finding in the faeces of a South African, suffering from epilepsy and with dysenteric symptoms, of ova indistinguishable from *F. hepatica*.

T. W. M. C.

BRADLEY (Burton). **Observations on the Water Snails of Monaro and New England, New South Wales, with Especial Reference to their Cercaria Carrying Capacity.**—*Med. Jl. Australia.* 1926. Feb. 6. 13th Year. Vol. 1. No. 6. pp. 147–159. With 5 text figs.

Bradley, from a survey of snails in infected regions, comes to the conclusion that *L. brazieri* is probably the transmitting agent of *Fasciola hepatica* in N.S.W.

T. W. M. C

MCKAY (A. C.). **A Note on the Intermediate Host or Hosts of** *Fasciola hepatica* **in New South Wales.**—*Med. Jl. Australia.* 1926. Mar. 13. 13th Year. Vol. 1. No. 11. p. 300. [3 refs.]

——. **An Intermediate Host of** *Fasciola hepatica* **in New South Wales.**—*Jl. Australian Vet. Assoc.* 1926. Mar. Vol. 2. No. 1. pp. 9–14. With 2 figs.

McKay records the fact that he has definitely shown that *F. brazieri* is an intermediate host by means of feeding experiments in guineapigs. But he questions whether it is one of the chief carriers.

T. W. M. C.

i. MONTGOMERIE (R. F.). **The Treatment of Liver Rot with Preparations of Male Fern—a Historical Survey.**—*Jl. Comp. Path. & Therap.* 1926. Mar. Vol. 39. Pt. 1. pp. 38–42. [34 refs.]

ii. ——. **Carbon Tetrachloride in Liver Rot of Sheep.**—*Ibid.* June. Pt. 2. pp. 113–131. [9 refs.]

iii. ——. **The Efficiency of Tetrachlorethylene in Liver Rot of Sheep.**—*Ibid.* pp. 132–133. [3 refs.]

i. In these three publications Mr. Montgomerie, Veterinary Adviser, University College, Bangor, makes an important contribution to the question of the control of liver rot in sheep. MAREK had advocated a preparation of male fern prepared under his direction and said to consist of lipoid soluble substances. This appeared under the proprietary name first of " Distol " and later of " Danistol." For this drug a high degree of success was claimed, but its use was to some extent limited by its price. The author is to be congratulated on having explored the relative merits of Danistol and liquid extract of male fern B.P. He now confirms his earlier conclusions that at least one brand of the liquid extract "can be successfully, and at a reasonable cost, employed on an extensive scale ". He goes on to say " comparative field trials indicated that Danistol was no more efficient than this extract." The number of sheep treated during 1924–25, and of which the author had knowledge, totalled over 30,000.

ii. HALL quoting JEFFREYS stated that carbon tetrachloride was 100 per cent. effective against intestinal flukes in foxes, but hitherto there had been no extensive trials of its use in liver fluke disease, and indeed one of the contraindications for carbon tetrachloride is the presence of liver lesions. In the present paper Montgomerie shows as a result of tests on 172 flukey sheep with pure carbon tetrachloride that the drug has a reliable anthelminthic action. A single dose of 1 cc. in soft gelatine capsules was found to be a therapeutic dose for sheep weighing up to 140 lbs. affected with liver rot. Half a cc. cured two sheep weighing 40 and 42 lbs. In no case were toxic symptoms observed. The drug compares very favourably with male fern. Its efficiency is at least equal, its cost considerably less, and it appears to be a safer drug.

iii. Tetrachlorethylene, although quite as effective against hookworms as carbon tetrachloride, is shown to have no action on liver fluke.

R. T. L.

CHOY (Paul D.) & LUDLOW (A. I.). **Ova of** *Paragonimus westermanii* **encysted in the Abdominal Wall.**—*China Med. Jl.* 1926. Apr. Vol. 40. No. 4. pp. 326–328. With 3 figs. [8 refs.]

Choy and Ludlow record a case in a Korean in whom a fibrous growth was found on the epigastrium which contained ova of *Paragonimus*

T. W. M. C.

TANAKA (Genei). [**On the Therapeutic Efficacy of Hydrochlorate Emetin against Lung Distomiasis.**]—*Chosen Igakkwai Zasshi* (*Jl Korean Med Soc*) 1925. May No 55 [Summarized in *Japan Med World* 1925 Dec 15 Vol 5 No 12 p 360]

The author has had marked results with emetine hydrochloride against lung flukes, the bloody sputum soon ceasing and the eggs disappearing

T. W. M C

FAUST (E. C.) & KHAW (O. K.). **Excystment Phenomena in** *Clonorchis sinensis*—*Proc. Soc. Experim. Biol. & Med.* 1925. Dec. Vol. 23. No. 3. pp. 245–248.

Although Clonorchis infection of dogs and cats is common throughout China and Japan, in man the parasite is confined to a restricted area in Japan, southern Korea, Kwangtung province (China), and Tonkin. The first intermediate host is *Bythinia striatula*, the second being practically any species of fresh water fish. In the fish the cercaria secretes a viscous fluid, which forms an inner true cyst. The presence of this capsule in the fish causes the formation of an outer fibrous capsule by the fish. Experiments—*in vivo* and *in vitro*—were conducted to determine the fate of the cercaria after being swallowed by the definitive host. The authors find that the fibrous cyst is digested in the stomach, and although the true cyst is unaffected by the gastric juice, those remaining in the stomach for 14 hours do not develop. In those which pass to the duodenum, the true cyst is weakened and the cercaria, stimulated to activity, ruptures the weakened cyst and escapes. The larval flukes attach themselves to the mucosa and mass in the region of the opening of the common duct. 48 hours after feeding the larvae have all migrated into the duct and from the 72nd hour onwards were found passing into the bile passages. The authors believe that only about 20 per cent. of the viable larvae excyst and only 5 per cent. actually reach the duct. This work suggests that the passage of the larvae to the liver is direct and not via the portal vein.

T. W. M. C.

FAUST (Ernest Carroll) & KHAW (Oo-Keh). **The Egg-Laying Capacity of** *Clonorchis sinensis.*—*Proc. Soc. Experim. Biol. & Med.* 1926. Apr. Vol. 23. No. 7. pp. 606–607.

The authors consider that egg laying in Clonorchis is a continuous process, and that the irregularity of eggs in the stool is due to host irregularities. The egg-laying capacity differs with the host animal—the numbers laid in the cat being more than double those in the dog.

T. W. M. C.

FAUST (Ernest Carroll), KE-FANG (Yao), KHAW (Oo-Keh) & YUNG-AN (Chao). **Experimental Therapy in Clonorchis Infections.**—*Proc. Soc Experim. Biol. & Med.* 1926. Apr. Vol. 23. No. 7. pp. 607–608.

The authors find that mercurochrome and gentian violet accelerate speed of egg production of Clonorchis in dogs and cats. Mercurochrome in lethal doses has no apparent clonorchicidal value, but tolerated doses of gentian violet cause the death of all Clonorchis in those parts of the bile passages reached by the dye. In light infections 100 per cent. and in heavy infections 90 per cent. are killed in this way. Oral administration requires prolonged treatment with small doses. Its use in human therapy is suggested.

T. W. M. C.

REED (Alfred C.) & WYCKOFF (Harry A.). **Cure of Clonorchiasis by Tartar Emetic.**—*Amer. Jl. Trop. Med.* 1926. Mar. Vol. 6. No. 2. pp. 115–117.

Reed and Wyckoff record the cure of a case of clonorchiasis in a Chinese woman following a course of tartar emetic.

R. T. L.

EINARSSON (Matthias). L'echinococcose en Islande. Sur le mode de contamination humaine. [**Echinococcosis in Iceland. Method of Spread to Man.**]—*Ann. Parasit. Humaine et Comparée.* 1926. Apr. 1. Vol. 4. No. 2. pp. 172–184. With 1 text fig.

In 1863 KRABBE found in Iceland 20 dogs per 100 inhabitants; in 1922 this number had decreased to 7 per 100. A statistical survey showed that nearly 12·5 per cent. of sheep harboured hydatid cysts—almost invariably in the liver. KRABBE had found that 28 per cent. of the dogs harboured the adult parasites, but the present number is not known. The author finds that the great majority of the infections are found in man between the ages of 20 and 40, and that females are three times as frequently affected as males. He believes that this is due to the practice of keeping the ewes and cattle in intimate contact with the women and children. The animals accumulate dried faeces on the skin, and so transmit them mechanically to the hands of the attendants. He believes that adequate cleaning of the hands before cooking and eating would greatly reduce the incidence.

T. W. M. C.

CAMERON (Thomas W. M.). **Observations on the Genus *Echinococcus* Rudolphi, 1801.**—*Jl. Helminthology.* 1926. Mar. Vol. 4. No. 1. pp. 13–22. With 2 text figs. [4 refs.]

From the medical and economic points of view *Taenia echinococcus* is one of the most important of the tapeworms of carnivores. Its larval stage, the " Hydatid ", assumes many diverse forms, but most modern workers consider that these all arise in the life cycle of a single species with the possible exception of the alveolar type found in Central Europe. The author has revised the genus with the result that he recognizes four distinct species, of which two are described and named as new. *Echinococcus cruzi* Brumpt and Joyeux 1924 is placed in the synonymy of *E. oligarthrus* (Diesing 1863), which is considered a valid species and was first recorded as a parasite of *Felis concolor.* The two new species are *E. longimanubrius* from the Cape hunting dog and *E. minimus* from *Canis lupus* in Macedonia. The specific differences are found in the size and shape of the hooks. It has not been possible to distinguish between the forms on the genitalia owing partly to the paucity of suitable material.

R. T. L.

DEW (Harold R.). **The Mechanism of Daughter Cyst Formation in Hydatid Disease.**—*Med. Jl. Australia.* 1926. Apr. 24. 13th Year. Vol. 1. No. 17. pp. 451–460. With 12 figs. [16 refs.]

Dew continues his series of papers on the development of hydatid (this *Bulletin,* Vol. 21, p. 209 ; Vol. 22, p. 480 ; Vol. 23, pp. 250–251). He has previously shown that daughter cysts are the result of something which threatened the life of the mother cyst, and in this paper he discusses the mode of origin of these cysts. He finds that they most commonly rise from the detached germinal layer but may also develop from brood capsule cells or, rarely, by vesicular changes from detached scolices. He has repeated and confirmed DÉVÉ's work on this point and finds that intramuscular or subcutaneous injections of scolices in about 70 per cent. of cases give rise to new cysts. He discusses the exogenous formation of daughter cysts. In man these are found practically only in the omentum and in bones. The omental cysts—which themselves are secondary—cause daughter cyst formation by herniations of both germinal and laminated layer through weakened parts of the adventitia, resulting from intercystic pressure. These herniations are finally excluded and form new cysts. Recurrent cysts are secondary cysts forming from several brood capsules or scolices implanted in an operation wound or elsewhere, which develop inside a common irregular adventitia and show a structure simulating exogenous budding. Normal endogenous daughter cysts have no adventitia and so they are able to produce, by herniation of both layers, grand-daughter and even great-grand-daughter cysts. In osseous hydatid, the original cyst spreads in the line of least resistance through the bony canals; the adventitia is irregularly placed and the pouching of the cyst may become constricted and finally cut off. There is, however, no true mother cyst in this case. He is unable to accept the old cell-islet theory as the cause of exogenous cysts in man at least.

Dew draws attention to the clinical importance of secondary hydatid which may result from the spilling of hydatid seed at operations or from rupture of the mother cyst and he recommends formalin injections into cysts before removal. Hydatid embolism may also occur after rupture of the mother cyst, and he believes that this is the explanation of most cases of multiple cysts in the lungs, head and brain.

T. W. M. C.

DÉVÉ (F). Evolution vésiculaire du scolex échinococcique obtenue *in vitro*. La culture artificielle du kyste hydatique. **[Vesicular Development of the Echinococcus Scolex obtained in Vitro.]**—*C.R. Soc. Biol.* 1926. Feb. 26. Vol. 94. No. 7. pp. 440–441. [3 refs.]

Horse serum was added to tubes of sterile hydatid fluid and scolices. After four days at 37° C. some of the scolices had commenced to become vesicular; at the 14th day some scolices were found about three times their original volume. They were not degenerate and had an intact cuticle, and Dévé believes that they had commenced the formation of secondary cysts. This work is being continued.

T. W. M. C

NICHOLLS (Lucius) **A Case of Mass Infestation with** *Cysticercus Cellulosae*.—*Ceylon Jl. Sci.* (Section D. Med. Sci.). 1925. Nov. 18. Vol. 1. Pt. 3. pp. 141–142. With 4 figs. on 1 plate.

A male patient, 34 years of age, was found dead without previous signs of illness or ill-health. Very large numbers of cysticerci of *T. solium* were found throughout the muscles of the body. The heart muscle was heavily infected and this was concluded to be the cause of death. From three square inches of the latissimus dorsi 22 cysts were removed. Unfortunately, the intestine was not examined for adult tapeworm, so that it is not known how infection was acquired. A very fine plate accompanies the brief record

R. T. L.

PRICE (Emmett W.). **The Occurrence and Distribution of** *Cysticercus cellulosae* **in Texas Swine.**—*Jl. Parasit.* 1925. Dec. Vol. 12. No. 2. pp. 81–83. With 1 map.

C. cellulosae is not uncommon in pigs in Texas, and a map is given showing the distribution of the parasite in that State. It is commonest in counties with a large Mexican and Negro population.

T. W. M. C.

LYON, Jr. (M. W.). **Native Case of Infestation by the Fish Tapeworm** *Diphyllobothrium latum.*—*Jl. Amer. Med. Assoc.* 1926. Jan. 23. Vol. 86. No. 4. pp. 264–265. [9 refs.]

Eight definite cases of infection with *Dibothriocephalus latus* have been recorded from the Great Lakes district of the United States. Lyon records a ninth from the same region in a boy of four years who had never left the district. He showed no symptoms at all, and the parasite was expelled during an attack of scarlet fever.

T. W. M. C.

REDLICH (E.). *Diaptomus graciloides* (Lilljeborg), ein neuer erster Zwischenwirt von *Dibothriocephalus latus*, nebst Bemerkungen zur experimentellen Entwicklung des Procercoids dieses Cestoden. [*D. gracilioides*, **a New Intermediate Host of** *D. latus*. **Experimental Development of the Procercoid.**]—*Arch. f. Wissenschaft. u. Praktische Tierheilk.* 1925. Nov. 12. Vol. 53. No. 4. pp. 353–361. With 7 figs. on 1 plate. [10 refs.]

In observing cultures of the early stages of the onchospheres of *Dibothriocephalus latus* the author found that he got better results with ova obtained from the gravid uterus of the worm, in particular those from segments which appeared brown owing to the presence of air, and placed in water, than from ova obtained from faeces. The times needed for development at different temperatures are stated, the average at room temperature being 10–13 days. Whether sea-water or tap-water was used made practically no difference, only 24 hours or so longer on the average, while the procercoid itself attains its development in 14–21 days.

Besides the *Cyclops strenuus* and *Diaptomus gracilis*, the *D. graciloides* was found by the author to be a very efficient intermediate host, in fact even more so than the two former, in that it might contain as many as five procercoids at once.

H. H. S.

CHANDLER (Asa C.). **New Records of** *Bertiella satyri* **(Cestoda) in Man and Apes.**—*Parasitology.* 1925. Oct. Vol. 17. No. 4. pp. 421–425. With 2 text figs. [3 refs.]

Chandler redescribes *Bertiella satyri*—normally a parasite of apes—and records a case of infection in an Indian girl. A key to the various species of the genus is given.

T. W. M. C.

SANDGROUND (J. H.). **Speciation and Specificity in the Nematode Genus** *Strongyloides.*—*Jl. Parasit.* 1925. Dec. Vol. 12. No. 2. pp. 59–80. With 2 plates. [38 refs.]

Sandground has made morphological and biological studies on the various species of Strongyloides available. He criticizes the practice of creating new species based purely on size and host, and regards " host specificity " as the best means of determining the validity of a species. He finds that *S. stercoralis* of man can also infect dogs and (to a lesser degree) cats, and he believes that this species is a normal canine parasite in Asia. Two species exist in monkeys—*S. cebus* in new world monkeys and *S. fülleborni* in old world monkeys. He has been unable to determine the standing of *S. nasua* found by DARLING in monkeys, examination of the type material disclosing no differences from *S. stercoralis*. *S. westeri* occurs in horses and *S. papillosus* in ruminants and pigs. He describes new species from the rat (60 per cent. of the Baltimore rats are infected) and from *Hydrochoerus hydrochoera*. He regards as at least doubtful the following species :—*S. ovocinctus, S. suis, S. vituli, S. siminae, S. canis.*

T. W. M. C.

SANDGROUND (J. H.). **Biological Studies on the Life-Cycle in the Genus** *Strongyloides* **Grassi, 1879.**—*Amer. Jl. Hyg.* 1926. May. Vol. 6. No. 3. pp. 337–388. With 2 text figs. and 4 figs. on 1 plate. [39 refs.]

The factors which determine the alternative modes of origin of the infective larvae of Strongyloides have still to be determined. In most species of this genus the infective larvae are derived either from the direct metamorphosis of the rhabditiform larvae found in the stool, and derived from the parasitic generation, or they are produced only after the intervention of a free-living generation of males and females. It was thought that temperature, humidity, constitution of the faeces, might so affect the rhabditiform larvae as to determine them on the direct or indirect course of development, but the work of BRAUN (1899) and others has proved that both modes of development may co-exist in cultures from a suitable case, and this can be demonstrated effectively by using the Baermann isolation technique on large cultures. Attempts by the process of selection to isolate strains exclusively showing only one type of development were unsuccessful. Infections of certain abnormal hosts lead to changes in the life cycle, and it is suggested that in certain species direct development originally followed upon the introduction of the more primitive heterogonic parasite into new species of hosts. The parasitic adult of Strongyloides is at present held by many to be parthenogenetic, but a cytological study of the gonads indicates that it is really hermaphroditic. This suggests that the determining factor is the chromosomal constitution of the eggs and that the sex of the free-living adult is determined by the presence or absence of a heterochromosome in the sperm.

R. T. L.

CHANDLER (Asa C.). **The Species of** *Strongyloides* **(Nematoda).**—*Parasitology.* 1925. Oct. Vol. 17. No. 4. pp. 426–433. With 2 text figs. [9 refs.]

GOODEY (T.). **Observations on** *Strongyloides fülleborni* **von Linstow, 1905, with some Remarks on the Genus** *Strongyloides*.—*Jl. Helminthology.* 1926. May. Vol. 4. No. 2. pp. 75–86. With 8 text figs. [5 refs.]

A study of the morphology of the species of the genus *Strongyloides*, which includes the common nematode intestinal parasite of man, *S. stercoralis*, leads the author to suggest that the various species should be grouped into two only, viz. : *S. papillosus* and *S. stercoralis*, and that the forms hitherto regarded as distinct species under the names *ovocinctus*, *fülleborni*, *suis*, *simiae* and *cebus* be reduced to host varieties or subspecies of *papillosus*, and the forms named *nasua*, *canis* and *felis* be made varieties or subspecies of *S. stercoralis*. It is considered that the morphology of the parasitic parthenogenetic females and their biological characteristics are more reliable for the differentiation of the various forms of *strongyloides* than is the morphology of the more variable free-living adults. Dr. GOODEY's article is chiefly directed, from a re-examination of material, to the rebutting of Chandler's main contentions. R. T. L.

CASTEX (Mariano R.) & LORENZO (Ramón). Sobre dos casos de parasitismo por el Strongilodes estercoralis. [**Cases of Infestation by** *Strongyloides stercoralis*.]—*Prensa Méd. Argentina.* 1923. July 30. 19 pp. With 1 fig. [7 refs.]

In case I there were large numbers of embryos in the faeces, and the blood count gave an eosinophilia of 19·54 per cent. Repeated dosing with small doses of thymol and of chenopodium oil has failed to eliminate the infection.

In case II the treatment consisted of thymol in 1 gm. doses every hour for five hours until a slight degree of intoxication was noticed, when the treatment was stopped. Various other treatments were tried, including sodium cacodylate, daily injections of bioplastine, lanoline inunctions, glycerine in gelatine capsules each containing 25 gm. at intervals of two hours between each dose followed by an enema of 30 gm. of glycerine in water two hours later. The author reports that the glycerine treatment had a very favourable effect as the larvae disappeared from the stools. The case was complicated with hookworm and whipworm.

R. T. L.

SEMENOV (G. M.). [**The Occurrence of** *Strongyloides stercoralis* **in Tashkent and the Biology of its Larvae.**]—*Russian Jl. Trop. Med.* 1926. No. 2. pp. 7–12. With 2 text figs. [In Russian.]

The author records the finding of rhabditiform larvae of *Strongyloides stercoralis* from the stool of a patient suffering from malaria. This is the first record of the species for Turkestan, and the fourth for Russia. The larvae measured 200–300μ in length and 22–25μ in breadth. When kept at 20° and 35° C. they all developed into the filariform stage, measuring 450–500μ in length. The author tested the influence of various chemical and physical agencies upon the filariform larvae and found that desiccation, direct sunlight and temperatures from 48 to 50° C. rapidly killed them; mercury perchloride (1 : 2,000, 1 : 1,000) was practically ineffective, whilst 2·5 per cent. carbolic acid and silver nitrate (1 : 2,000 solution) killed them within several minutes.

C. A. Hoare.

SARCINELLA (F.). Anguilluloses graves traitées par l'émétine. [**Treatment of Strongyloides Infections with Emetine.**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 205–207.

Sarcinella states that he has very frequently observed diarrhoea due to Strongyloides, and describes three cases in which there were general disturbances as well—a generalized oedema being common to all. He suggests the use of emetine in the treatment of these infections.

R. T. L.

CHANDLER (Asa C.). **A Contribution to the Life-history of a Gnathostome.**—*Parasitology.* 1925. Aug. 28. Vol. 17. No. 3. pp. 237–244. With 6 text figs. [3 refs.]

Chandler finds that many of the snakes dying in the Calcutta Zoological Gardens harbour Gnathostoma larvae. When fed to young cats, the young gnathostomes were recovered from the liver tissue and elsewhere, but only slightly more developed. About 10 per cent. of local cats, not fed on the larvae from snakes, also harbour the parasite in an immature condition.

T. W. M. C.

GUPTA (B. N.). **A Fatal Result associated with Filarial Infection.**—*Indian Med. Gaz.* 1926. Feb. Vol. 61. No. 2. pp. 75–76.

Gupta records a fatal case of intermittent fever and icterus at Howrah hospital, when nothing abnormal was found except the presence of microfilaria in the blood on the morning of admission. He states that as filarial septicaemia is unknown, the case is of interest as being one possibly of some other septicaemic condition in which the microfilaria simply came out into the peripheral circulation of the unconscious patient as they would have done if he was sleeping.

R. T. L.

RAO (P. Rajeswara). **Antimony and Filariasis.**—*Indian Med. Gaz.* 1926. Mar. Vol. 61. No. 3. p. 121.

Rao has used sodium antimony tartrate injections for the past four years in cases of filariasis and finds that although the blood has not been rendered free from the microfilaria, the pathological effects can be cured.

R. T. L.

MANSON-BAHR (Philip). **On the Longevity of the** *Loa loa* **and some hitherto Undescribed Manifestations of this Infection.**—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 222–224. With 2 figs. on 1 plate. [4 refs.]

Manson-Bahr records two cases of *Loa loa* infection in one of which the observed life span of the parasite was considerable—nearly 17 years; while in the other embryos were absent from the blood stream for a number of years and permanent induration of the connective tissue was apparently caused by the adults.

T. W. M. C.

SHARP (N. A. Dyce). **A Contribution to the Study of** *Onchocerca volvulus* **Leuckart, with some Observations on its Prevalence in Nigeria.**—*Trans. Roy. Soc. Trop Med. & Hyg.* 1926. Jan 21. Vol. 19. No. 7. pp. 373–388. With 1 plate and 2 text figs. [20 refs.]

Tumours due to *Onchocerca volvulus* are common in Northern Nigeria, and appear to be painless and harmless. Skin examination showed the absence of *Agamofilaria streptocerca*, only *O. volvulus* being found—usually causing no reaction, but sometimes with a layer of definite inflammatory change.

It is pointed out that none of the arguments implicating *F. bancrofti* as the cause of elephantiasis are conclusive, and he suggests a possible connexion between Onchocerca and the disease. Out of 25 hydroceles examined, only 16 per cent. were infected with *Mf. bancrofti*, while 40 per cent. were infected with *Mf. volvulus*. The embryo of *Onchocerca volvulus* is described and illustrated, as stained with dilute Giemsa for two hours.

The tumours characteristic of the disease are only found in the later stages, and often onchocerciasis may exist without the formation of nodules at all. The writer has tried a Bayer preparation—B. 1916—in a case of the disease with excellent results.

T. W. M. C.

BLACKLOCK (D. B.). **The Development of** *Onchocerca volvulus* **in** *Simulium damnosum*.—*Ann. Trop. Med. & Parasit.* 1926. Feb. 11. Vol. 20. No. 1. pp. 1–48. With 16 figs. on 4 plates and 12 text figs.

Blacklock was able to find larvae of *Onchocerca volvulus* in 45 per cent. of the inhabitants of Konno, Sierra Leone. The larvae may be present without causing any skin lesions at all, and no definite relationship between the presence of the larvae and skin or eye disease could be established. *Simulium damnosum* is a day-biting fly, which takes some time to pierce the skin and reach the blood and so inflicts a wound such as would dislodge the larvae of *Onchocerca* from the skin. Dissections of wild flies captured during biting showed that 2·6 per cent. had in their gut larvae which appeared to be *Onchocerca*, while in the thorax of 1 per cent. were larvae in a more advanced state of development. Flies were fed on infected skin and kept alive as long as possible, and a large percentage were found to be infected in the thorax—much higher than in casual collections. The larvae in the skin and in the fly are described.

T. W. M. C.

BLACKLOCK (D. B.). **The Further Development of** *Onchocerca volvulus* **Leuckart in** *Simulium damnosum* **Theob.**—*Ann. Trop. Med. & Parasit.* 1926. June 24. Vol. 20. No. 2. pp. 203–218. With 1 fig. and 1 plate.

Using "wild" specimens of *Simulium damnosum*, Blacklock has continued his experiments and finds that the parasite after developing further in the thorax, and altering in size and shape, proceeds to the head of the fly, and under suitable conditions these forms readily escape from the proboscis (as when brought into contact with warm monkey serum). Flies have not been kept alive for more than 19 days, but Blacklock states that the shortest period which elapses after feeding before the proboscis becomes infected was 7 days [but he was using wild and, consequently, uncontrolled flies].

T. W. M. C.

BAYLIS (H. A.), PAN (T. C.) & SAMBON (Juliet E. B.). **Some Observations and Experiments on** *Gongylonema* **in Northern Italy. A Preliminary Note.**—*Jl. Trop. Med. & Hyg.* 1925. Dec. 1. Vol. 28. No. 23. pp. 413–419. With 14 text figs. [5 refs.]

The writers have investigated the life histories of several species of Gongylonema in northern Italy, and find that dung-beetles—which are found only in the open—are the natural intermediate hosts of the cattle species. Household insects and cockroaches are not naturally infected, although large numbers were carefully examined. It was found possible, however, to infect *Blattella germanica* with the cattle Gongylonema, but not *Blatta orientalis*. Feeding experiments of rats with *B. orientalis* were negative, although two were infected with larvae dissected from dung-beetles and *B. germanica*. No naturally infected rats were found.

T. W. M. C.

BAYLIS (H. A.) **On the Identity of** *Gongylonema subtile* **Alessandrini.**—*Jl Trop Med. & Hyg* 1925 Oct 15 Vol 28 No. 20. pp. 361–362. [13 refs]

Baylis has examined the specimens which ALESSANDRINI collected from an Italian girl in 1914, and described as a new species of Gongylonema—*G subtile*—and finds that they are identical with *G. pulchrum*.

T W M C

PANAYOTATOU (Angelica) **A Case of Ascaridiasis with Benign Jaundice,**—*Brit. Jl. Children's Diseases* 1925. July–Sept. Vol. 22. Nos. 259–261. pp. 218–220. [2 refs.]

The subject, a boy of 8, was admitted to the clinique with generalized jaundice but neither pain nor pyrexia There was no intestinal disturbance apart from nausea, dizziness and lack of appetite Ascaris ova were found in the stools, and after treatment with santonin and calomel, he passed ten worms Two days later he appeared normal The writer suggests that the possibility of Ascaris should be considered in all illnesses of the intestinal canal

T. W M C.

RICO (J Toscano) Sur la sensibilité de l'*Ascaris lumbricoides* à l'action de quelques drogues. [**The Sensitiveness of** *A lumbricoides* **to the Action of Certain Drugs.**]—*C. R. Soc Biol.* 1926 Apr 9. Vol 94. No. 12. pp. 921–923. With 2 text figs [2 refs]

Rico has tested the paralysing action of chenopodium, male fern, santonin, etc, on the Ascaris of the pig; the full results of which he will publish at a later date, He finds that the anterior and posterior parts of the worm are much more active than the middle

T W M·C

RICO (J. Toscano) Sur l'emploi de l'*Ascaris lumbricoides* comme réactif pharmacologique. Action de la nicotine [**The Use of** *A lumbricoides* **as Pharmacological Reagent.**]—*C R Soc Biol* 1926 Apr. 9. Vol. 94 No 12. pp 918–920 With 1 text fig [9 refs]

Rico points out that parasitic helminths have been relatively seldom used to study the pharmacological action of anthelmintics Using *Ascaris lumbricoides* of the pig he finds that nicotine causes the cessation of spontaneous movements—especially in the anterior portion of the worm.

T. W. M. C.

HARIGOPAL (A. R.). **A Case of Night-Blindness due to** ***Ascaris lumbricoides*** **Infection.**—*Indian Med. Gaz.* 1926. Mar. Vol. 61. No 3. p. 130.

A case of night blindness in a boy of six, for which no cause could be found, disappeared after the expulsion of a number of Ascarids after treatment with santonin Harigopal states that he has seen other similar cases cured in this manner

R T L.

AFRICA (Candido M) & MENDOZA-GUAZON (Maria Paz). **Is there Ascaris Nephritis ?**—*Jl Philippine Islands Med. Assoc.* 1926. Feb Vol 6 No. 2. pp 49–54. [6 refs]

These writers discuss the case of a boy who died from an acute haemorrhagic nephritis and who suffered from a heavy ascarid infection They consider that the nephritis may have been caused by the continued destructive action on the glomeruli of migrating ascarid larvae, owing to the resemblance to YOKOGAWA's experimental cases in guineapigs and dogs. The other changes they ascribe to the ascarid toxins absorbed from the alimentary tract

R. T. L

DOGNON (A) Action de la température sur la radiosensibilité de l'oeuf d'Ascaris **[Effect of Temperature on the Radiosensitiveness of the Ascaris Egg.]**—*C R. Soc Biol* 1926 Feb 26 Vol 94 No 7 pp 466–468 With 1 chart in text [1 ref]

Dognon has already noted that a rise in temperature from 15° to 35°C almost doubles the sensibility of Ascaris eggs to X-rays He now finds that this sensibility rapidly increases at higher temperatures—at 39° being three times, and 47°C being five times greater than at 20°C

T W M C

ASADA (Junichi) **[Studies on the Oral Infection with Ascaris. Communication I. On the Route of Transmigration in the Host's Body in Oral Infection.]**—*Tokyo Iji-Shinshi* (*Tokyo Med News*) 1925 Oct No 2441 [Summarized in *Japan Med World* 1926 Jan 15. Vol 6 No 1 pp 11–12]

Asada finds that the mature naturally hatched larvae of Ascaris can infect the host when swallowed The larvae pass to the lungs either by way of the capillaries, portal vein and heart, or through the abdominal cavity and, by perforating the liver, reach the heart He finds that the former is the common method Once the lungs are reached, Asada states that they then follow the same regular course as in the cutaneous infection

T W M C

DELVOIE (Paul) Quelques méfaits des vers intestinaux **[Some Accidents caused by Intestinal Helminths.]**—*Arch Méd Belges* 1926. Jan Vol. 79. No 1 pp 9–11 [1 ref]

In discussing the " misdeeds " of helminths, Delvoie records an impaction from which he recovered 55 ascarids, 15 others being evacuated with the aid of santonin , and a duodenal stenosis in a child of 12 caused by Ascarids

R T L.

PAWAN (J. L.). **A Case of Infection with** *Lagocheilascaris minor* **(Leiper).**—*Ann. Trop. Med. & Parasit.* 1926. June 24. Vol. 20. No. 2. pp. 201–202.

Pawan records an infection in a Trinidad youth with *Lagocheilascaris minor* in a tumour below the angle of the jaw. The tumour and right tonsil when removed both proved to contain specimens of the parasite.

T. W. M. C.

HASE (Albrecht). Kurzer Beitrag zur Frage der Bekämpfung der Oxyuriasis mit Oxylax. [**The Combating of Oxyuriasis with Oxylax.**]—*Muench. Med. Woch.* 1926. Jan. 29. Vol. 73. No. 5. p. 196. [5 refs]

After long trial of the usual methods of treating Oxyuris infection in three members of one family, the mother and two children, the author gave Oxylax. This is made up in chocolate tablets and each contains 0·15 gm. of Tubera jalapae and 0·1 gm. of Dihydrooxyphtalophenon. On account of the taste of the vehicle children take the drug readily. The first dose led to the evacuation of several worms and the course was continued (one tablet daily) for about four weeks. All subjective symptoms disappeared, and repeated search since the termination of treatment has failed to reveal either worms or ova in any of the patients

H. H. S.

NEBERT (H.). Ueber die Oxyurenbehandlung mit Oxylax. [**Treatment of Oxyuriasis with Oxylax.**]—*Deut. Med. Woch.* 1926. Feb. 5. Vol. 52. No. 6. pp. 240–241. [1 ref.]

A brief paper of further laudatory remarks on Oxylax in oxyuriasis [*ante*, p. 259]. A case is cited in which rapid cure resulted and the general condition passed from that of a weakly, anaemic child, irritable from disturbed sleep, to a healthy one, enjoying life to the full and sleeping well. The drug appears not only to be an effectual anthelmintic, but to have the additional advantages of requiring no preliminary dietetic restriction, nor any accompanying local application, such as lavage.

H. H. S.

NISHINO (Tsunenori). [**Studies on Oxyuris. Communication II.**]—*Chiba Igakkwai Zasshi* (*Jl. Chiba Med Soc.*) 1925 Feb. Vol. 3. No. 2. [Summarized in *Japan Med. World* 1925 Dec 15. Vol. 5. No. 12 p 359.]

The writer deals with the migration in the digestive tract of the host, and the development of the species which occur in man and in rats. [No details are given in the summary]

T. W. M. C.

MOSES (Henry Monroe). **Trichinosis.**—*Long Island Med. Jl.* 1926. Jan. Vol. 20. No. 1. pp. 7–13. With 1 text fig. [16 refs.]

Moses describes the case of a Swedish sailor who died 23 days after admission to hospital suffering from inability to walk and pains in the muscles of the limbs, trunk, and mouth. A biopsy specimen from the gastrocnemius muscle showed the presence of Trichinella larvae. The leucocyte count gave 14,100–14,300 with an eosinophilia of 17 to

20 per cent He points out that cases of Trichinella infestation may easily be diagnosed as typhoid fever, and quotes Boston and Chicago reports of 20 and 27 cases, respectively, so diagnosed in recent years

R T. L

BETTISON (William L) **Trichinosis. Report of Four Cases, with Recovery, occurring in the University of Michigan Student Health Service.**—*Jl Amer Med Assoc* 1926 Feb 27 Vol 86 No 9 pp 609–613 With 6 text figs [11 refs]

Bettison reports four cases who contracted trichinosis from eating undercooked pork Symptoms developed in two or three weeks and consisted of headache oedema of the face and eyelids, muscular pain and fever (101°–105° F) and sweating Blood examination showed a marked eosinophilia (up to 39 per cent) and a leucocyte count which varied from 3 600 to 30 000 The diagnosis was confirmed by microscopical examination of pieces of the gastrocnemius muscle All recovered

R T L

CHENEY (Garnett) **Sporadic Trichinosis with Extreme Hypotension.**—*Jl Amer Med Assoc* 1926 Apr 3 Vol. 86 No 14 p 1004 [5 refs]

Cheney records a case of trichinosis in San Francisco There was at first no eosinophilia, but later this rose to 41 per cent The muscles were tender on palpation The case was unusual on account of the extreme hypotension observed Diagnosis was made from a piece of excised pectoral muscle

R T L

DOCHERTY (J Frank) **Value of Hookworm Control of Ceylon Estates.**—*Ceylon Jl Sci* (Section D Med Sci) 1925 Nov 18 Vol 1 Pt 3 pp 111–120 With 6 charts [2 refs]

The majority of the planters in Ceylon are satisfied that systematic hookworm control results in a marvellous change in the health of the coolie As accurate data concerning this improvement is seldom forthcoming, the author undertook a control demonstration on an estate in the North Matele District The coolie population approximated 1,100 to all appearance the majority were fairly heavily infected, the children apparently suffering the most The whole were treated with carbon tetrachloride according to the following table —

A *Dosage* 2–18 years twice age in mins
18–40 ,, 40–45 mins
40–50 ,, 30–40 mins
50–55 ,, 20 30 mins

B *Exemptions*
1 All below 2 and over 55 years of age
2 Pregnant but not nursing mothers
3 Alcoholics who had imbibed within 48 hours of treatment
4 Epileptics and all hospital cases

C *Precautions*
1 No food on the morning of treatment
2 A post purge of Epsom salts 2 hours after treatment
3 A minimum treatment interval of ten days
4 No food until 2 hours after Epsom salts had been administered
5 A second purge if bowels had not moved in 6 hours

Later chenopodium was used for children under 10 years of age. The average monthly rate of reinfection was 1·66 per cent. of original infection where a fair amount of soil pollution existed in spite of adequate sanitation. Although practically the entire labour force was found reinfected within a year the infection was considered to be very light, the average coolie acquiring in twelve months 20 per cent. of his original infection.

R. T. L.

DOCHERTY (J. Frank). **Hookworm Infestation and Reinfestation in Ceylon. A Study of High Incidence with a Moderate Degree of Infestation.**—*Amer. Jl. Hyg.* 1926. Mar. Supp. Vol. 6. pp. 160–171. With 3 charts in text. [4 refs.]

Docherty analyses over 20,000 egg counts (for Necator) made in Ceylon with a Stoll technique and concludes that there is only a moderate grade of infection in the areas considered and that there is a marked tendency for infection to re-establish itself following treatment on the intensive system. He believes that repeated mass treatments at definite intervals are necessary since, irrespective of the number of treatments received, the average villager in 33 months has re-acquired an infection of about 67 per cent. of his untreated neighbours.

T. W. M. C.

SWEET (W. C.). **Hookworm Re-Infection. An Analysis of 8,239 Ceylon Egg-Counts.**—*Ceylon Jl. Sci.* (Section D. Med. Sci.). 1925. Nov 18. Vol. 1. Pt. 3. pp. 129–140. With 1 fig. [3 refs.]

In 1924 the " Ceylon Anchylostomiasis Campaign " began work on an island-wide survey to determine hookworm infection rates by means of Stoll's egg-count method on faecal specimens collected from available representative groups of the population. From the analysis of 8,239 Stoll egg-counts, it was found that previously treated persons had a considerably lower infection intensity than untreated persons, the reduction being greatest in the children's groups. Reinfection was most rapid in the first three years following treatment, between the 3rd and 7th years it remained at a level, and then began to rise again. It is suggested that the average length of life of the adult worm is between 3 and 5 years. While the importance of sanitation is upheld it is argued that the impossibility of introducing adequate sanitation immediately is no bar to the eventual accomplishment of hookworm control.

R. T. L.

CHANDLER (Asa C.). **Some Factors affecting the Propagation of Hookworm Infections in the Asansol Mining Settlement, with Special Reference to the Part played by Cockroaches in Mines.**—*Indian Med. Gaz.* 1926. May. Vol. 61. No. 5. pp. 209–212. [3 refs.]

Chandler finds that the surface infection of soil with hookworm larvae in Asansol Settlement is almost stopped by desiccation for six months of the year, and in consequence hookworm infection is relatively light. In the mines where this factor does not operate, and the conditions are favourable, owing to the feeding habits of the cockroaches, which rapidly destroy the stool and with it the eggs, infection is also light. In regular defaecation places where the cockroaches are not entirely able to cope with the faecal output, the infection is higher

T. W. M. C.

KORKE (Vishnu T.). **Observations on Ankylostomiasis in some Areas in British India.**—*Indian Jl. Med. Res.* 1926. Jan. Vol. 13. No. 3. pp. 493–523. With 1 text fig. and 12 figs. on 7 plates. [8 refs.]

Korke counted eggs by means of the Stoll technique, and isolated larvae by a modified Baermann technique. He found Necator was very prevalent in the Singhbhum area, the other common parasites being Ascaris, Strongyloides and Oxyuris. In the Puri and Cuttack areas hookworm was also common, while a considerable number of Strongyloides cases were also found.

T. W. M. C.

COVELL (G.). **Ankylostomiasis among the Troops in Dehra Dun.**—*Indian Jl. Med. Res.* 1926. Jan. Vol. 13. No. 3. pp. 539–546. [5 refs.]

Using the Lane " D.C.F. " technique, Covell finds that 83 per cent. of the troops in the Dehra Dun are infected with hookworm, 16 per cent. with whipworms and 47 per cent. with Taenia. The infection with hookworm among the Gurkhas was especially high (92·9 per cent.).

T. W. M. C.

SOPER (Fred L.). Notas sobre la distribucion geografica de la uncinaria en el Paraguay. [**The Geographical Distribution of Uncinariasis in Paraguay.**]—*Rev. Soc. Cientifica d. Paraguay.* 1924. Oct. Vol. 1. No. 6. pp. 81–82. With 1 fig.

136 individuals (soldiers and prisoners) from various parts of the State of Paraguay who were examined for hookworm were classified into two groups, viz., those from the area where an anti-hookworm campaign had previously been conducted and those from the remaining regions. The results of the investigation show that in the former group the average number of *Necator americanus* recovered was 449·6, in the latter group 378·2, and the average for *Ancylostoma duodenale* was 39·8 and 19·3 respectively, i.e., the relation between Necators and Ancylostomas being in Zone A 11·3 to 1 and in Zone B 19·6 to 1. The explanation of the reduction in the relative numbers is explained as due to the well-known fact that Necators are less resistant to anthelmintics than Ancylostomas.

R. T. L.

CARDOSA (Carlos Arturo). Informe narrativo de clausura del laboratorio de uncinariasis, establecido en Garagoa el 20 de julio de 1923. [**Report of the Uncinariasis Laboratory, Garagoa, Colombia.**]—*Repert Med. y Cirug.* Bogota. 1924. Mar. Vol. 15. No. 6. (No. 174). pp. 316–327.

This reports the treatment for hookworm of all inhabitants *en masse* without previous microscopical examination, the whole population or at least the majority where anaemia is endemic being considered to be suffering from hookworm. Over 20,000 persons were treated without untoward incident and the campaign is considered to have proved of great benefit, especially to the poorer classes who hitherto had not received any medical care.

R. T. L.

VACCAREZZA (Raúl F.). La anquilostomosis en la República Argentina. [**Ankylostomiasis in the Argentine Republic.**] [With Appendix.]—*Semana Medica.* 1924. No. 21. 135 pp. With 5 figs. [54 refs.]

Ancylostomiasis is widely spread in the north of the Argentine Republic, particularly in the province of Corrientes and in the governments of Chaco, Formosa and Missiones. Isolated autochtonous cases of ancylostomiasis or necatoriasis have been observed in the Federal Capital as well as in all other provinces.

Forty per cent. of the persons examined (these being natives of the province of Corrientes and of the government of Missiones, who were incorporated in Army and Navy and were in apparently good state of health) have, from a simple coprological examination, been found to be carriers.

All this country is more or less contaminated with ancylostomiasis. In some localities of the province of Corrientes and the neighbouring governments the endemic index is so high, that practically all their inhabitants should be considered as infected

The intensity of infestation, deduced from the lowest parasitic index obtained with the cases mentioned above, amounts to 110 per individual.

The affection is very often met with in childhood, and reaches the highest degree of frequency in adolescence. It is commonly to be found in adults in an attenuated form, and generally passes unnoticed, until a microscopical examination of faeces reveals the presence of the parasite. Grave cases have been observed especially among infants.

In the blood there is a more or less marked anaemia with predominant oligochromemia and manifest eosinophilia; frequently there is a slight hyperleucocytosis also.

Necator americanus occurred habitually in patients examined by the author, associated with some frequency with Whipworm and other intestinal helminths.

Carbon tetrachloride is the treatment of choice. In case of contra-indication, such as with alcoholics and hepatic insufficiency, or by partial failure (persistence of the ova after two treatments), one must fall back upon essential oil of chenopodium or its active principle, ascaridol. The latter should be administered jointly with the former, in intestinal polyhelminthiasis.

The chenopodium oil was, in routine, administered in doses of 0·60–3·60 cc. for adults. Doses lower than 1 cc. were used only in initial cases, or on first administration, the average dose then being 1–1·80 cc. Children have been given two drops of the officinal chenopodium oil (with 60 per cent. of ascaridol) for every year of age. It has been usually given on an empty stomach, twice, with an interval of an hour between each dose; afterwards a purgative of magn. sulph. and a consecutive milk-diet was prescribed. This treatment was repeated with an interval of 8–10 days until no eggs could be found in the faeces.

The treatment *en masse* of the infected population and the sanitation of the soil by means of the obligatory construction of closets are fundamental.

The use of footwear is an important auxiliary and the hygienic enlightment of the population a necessary complement.

R. T. L.

WARREN (Andrew J.) & CARR (Henry P.). Incidencia de la uncinariasis en Mexico. **[Incidence of Uncinariasis in Mexico.]**—Reprinted from *Bol. d. Departamento de Salubridad Publica.* 'Mexico, D.F. 1925. No. 3. 84 pp. With 18 charts. [16 refs.]

This is an account of an investigation into the prevalence and effect of hookworm infestation in various districts of Mexico, carried out between May, 1924 and January, 1925. The ends aimed at were: (1). The geographical distribution of infestation according to elevation, temperature, rainfall, and type of soil. (2). The distribution and severity in correlation with age, sex, race, locality, and occupation. (3). The source of infestation with a view to formulating preventive measures. (4). The effects on the individual.

The technique employed is detailed, and was on the usual lines; the presence or absence of ova in the faeces by Willis's method; the absolute number per gramme of faeces by Stoll's method; the haemoglobin percentage by Dare's instrument. A considerable part of the report is taken up by a discussion of the values of the methods used. A standard was determined upon by which those with less than 700 ova per gramme were regarded as harbouring 25–30 worms, and as being " hookworm carriers " but not suffering from Uncinariasis. The table of degree of infestation and the reduction of haemoglobin shows the correlation between the two in the authors' cases, and was astonishingly graded, results at variance with those obtained in other investigations. Various districts are dealt with *seriatim* with details giving the incidence and severity. Of 4,604 worms determined, 4,246 were *Necator*, nearly equally distributed in sex, namely 2,226 males and 2,020 females. 358 were *Ancylostomas*, 223 males and 135 females. There were, therefore, 7·7 per cent. of the latter to 92·3 per cent. of the former. The percentage of infection in different places is calculated on too small numbers to convey any useful information. Thus it is stated that in Cordoba 100 per cent. of adult males were infected, but, on referring to another column, we find that only one was examined. The same occurs elsewhere; in fact, in 17 instances in this table alone, treating of the " Percentage of Uncinariasis in Mexico," these figures are calculated on numbers less than 10.

H. H. S.

CORT (William W.). **Investigations on the Control of Hookworm Disease. XXXIV. General Summary of Results.**—*Amer. Jl. Hyg.* 1925. Jan. Vol. 5. No. 1. pp. 49–89.

This, the 34th paper, marks the close of the series of publications on the hookworm investigations carried out by the staff of the Department of Medical Zoology of the School of Hygiene and Public Health, Baltimore, and summarizes the results obtained. In this *Bulletin* the various sections have already been abstracted as they appeared, but those desirous of an authoritative summary of the important and in some respects unique and unexpected results obtained should read the present paper by the senior author, who emphasizes again the point that the work has served to open up the problems and to illustrate the complexity of the factors involved in the epidemiology and etiology of hookworm disease as well as to give an explanation and indicate a solution of these problems.

R. T. L.

DARLING (Samuel T.). **Comparative Helminthology as an Aid in the Solution of Ethnological Problems.**—*Amer. Jl. Trop. Med.* 1925. Sept. Vol. 5. No. 5. pp. 323–337. [1 ref.]

In this fascinating address, composed on board ship when bound for the Holy Land, where he lost his life in a motor accident, the late Dr. Darling, of the International Health Board, explores the possibility that comparative helminthology may come to the aid of paleontologists and comparative anatomists in elucidating the subject of man's origin and migrations. A study of the species of hookworms harboured by man in divers places gives suggestive results. There can hardly be any question but that the distribution of the two species of hookworms of man does not depend on climate and soil, but is due to the migration of the hosts which harbour them. In an analysis of worm counts it has been found that mixed forms tend to be found when there is known to have been mixtures of two or more ethnic stocks. Moreover, pure cultures tend to be found in certain geographical areas as well as in ethnic stocks. *A. duodenale* is found in pure culture in Egypt and in Europe, *N. americanus* in Kaffirs in South Africa and in negroes in the southern United States, and also amongst Solomon Islanders and Polynesians. Mixed cultures are more commonly found than pure cultures, and this might be expected as a result of the migration of peoples and the mixtures of races which have taken place even within historic times. Yet one or other species tends to predominate more or less markedly in certain areas where mixture of races occurs in unequal proportion , e.g., in Java, Malays carrying especially Necator occur alongside North Indian stock which has come to the island within recorded times. In India, the population from which it was derived carries a higher proportion of *A. duodenale*, and in Java, where there is a large proportion of this Indian stock, there is a higher proportion of this hookworm than in other parts of the island where the stock is absent. Similar examples occur in Fiji, Brazil and Jamaica.

From these observations the author draws the conclusions that two races of anthropoids arose in geographical areas widely separated by water, and were in the first instance infested with different species of hookworm. That in the Holarctic region harboured *A. duodenale*, while the other, the primitive dark-skinned race which arose in the Ethiopian-Oriental zone, harboured *Necator americanus*. The absence of Necator from Egypt and Europe is an indication that there has been no intrusion of negroid stocks into these countries in spite of the Roman conquests and the influx of conquered peoples into Egypt, Greece and Rome. The dark-skinned inhabitants of the Mediterranean basin are a distinct race not of negroid origin.

R. T. L.

SMILLIE (W. G.) & AUGUSTINE (D. L.). **Hookworm Infestation. The Effect of Varying Intensities on the Physical Condition of School Children.**—*Amer. Jl. Dis. Children.* 1926. Feb. Vol. 31. No. 2. pp. 151–168. With 3 charts in text. [9 refs.]

Smillie and Augustine point out that American workers distinguish between light infections with hookworms (carriers) and heavy infections (hookworm disease), whereas others hold that every case must be considered as disease. The latter idea requires better methods of diagnosis and improved treatment, whereas the former demands some method of measuring the degree of infestation. They believe that some confusion has been caused by the use of the word " Hookworm," which includes two parasites. Infections with *Ancylostoma* are much more severe than those with *Necator.* The present paper deals only with *Necator* in the southern United States. Ova counts were made by the Stoll technique, and children were divided into six groups, based on the number of hookworms calculated to be present as follows : negative, very light (1–25), light (26–100), moderate (101–500), heavy (501–1,000) and very heavy (1,001–3,000). They find that although moderate infections cause less injury than do heavy, yet they cause appreciable damage. No ill effects were seen either in measurements or in haemoglobin in children with under 100 parasites. A typical clinical picture is seen only when over 500 worms are present. They consider that drugs need only be employed when over 100 worms are present, while for the carrier stage (under 100) sanitation and education can be relied upon for control. T. W. M. C.

SMILLIE (W. G.) & AUGUSTINE (D. L.). **The Effect of Varying Intensities of Hookworm Infestation upon the Development of School Children.**—*Southern Med. Jl.* 1926. Jan. Vol. 19. No. 1. pp. 19–28. With 4 charts in text. [5 refs.]

This is a second study on the subject and is based on an analysis of the improvement in height, weight, vital capacity, haemoglobin, etc., of 568 school-children three months after treatment for hookworm infestation of different degrees of intensity. With the exception of the haemoglobin it is obvious that improvement within so short a period as three months is a very difficult matter to measure or evaluate. *Necator americanus* was the only hookworm found, and the fact that this causes less severe injury than *Ancylostoma* makes the estimation of improvement even more difficult. The authors conclude that a definite gain in height, weight, and haemoglobin percentage occurs in children who have harboured 100 worms or more, after their removal. Those with less than 100, but more than 25, improve as regards the haemoglobin only, the other factors being unaffected, at least to any recognizable extent. Those with less than 25 show no change, thus lending support to the importance of distinguishing the " hookworm carrier " from those suffering from " hookworm disease."

H. H. S.

WILSON (D. B.). Calculo del número de gusanos por el método de Stoll. [**Enumeration of Worms by Stoll's Method.**]—*Repert. Med. y Cirug.* Bogota. 1925. Apr. Vol. 16. No. 7. (187). pp. 301–303.

The author, who is Director of the Department of Uncinariasis in the International Council of Sanitation at Bogota, has applied Stoll's method to a series of cases of hookworm at Chicoral in Espinal. In 99 patients there were approximately 11,642, or an infestation of 118 worms per person. In 41 female patients he calculated that there were 3,350 hookworms, i.e., 82 per person. The 58 males in the series gave 8,292 worms, or 145 per person according to the method of calculation. The occupation of a large percentage of the men was not ascertained, but some of them were employed in the country. A number wore " alpargatas " [these are canvas shoes with cord soles]. One patient who had, according to calculation, 1,020 worms, travelled two days to reach the laboratory, and had received two months before a course of thymol in unknown doses from a local pharmacy. At the first evacuation after treatment the individual expelled 150 Necators, but could not be persuaded to remain longer to enable the total number of worms harboured to be ascertained. In the neighbouring village of Melgar, the worm count in 17 patients gave an average of 138 worms, although these lived under conditions identical with those examined by Stoll's method. The worm count in this group, however, was made after treatment with carbon tetrachloride. The average in this group reached just over 20 per patient more than was calculated in a similar group by Stoll's method.

R. T. L.

CHANDLER (Asa C.). **The Rate of Loss of Hookworms in the Absence of Re-Infections.**—*Indian Jl. Med. Res.* 1926. Jan. Vol. 13. No. 3. pp. 625–634. With 2 charts in text. [12 refs.]

Chandler has examined the faeces of over 900 prisoners in Alipore jail, and, using the number of eggs found with a modified Stoll technique as a criterion, finds that 50 per cent. of the original infection is lost within three months, 70 per cent. in a year, 80 per cent. in two years, 90 per cent. in four years and 93 per cent. in six years. Slight infections were, however, found in prisoners up to 20 years, but he is not absolutely certain that all chances of re-infection have been excluded.

T. W. M. C.

AUGUSTINE (Donald L.) & SMILLIE (Wilson G.). **The Relation of the Type of Soils of Alabama to the Distribution of Hookworm Disease.** —*Amer. Jl. Hyg.* 1926. Mar. Supp. Vol. 6. pp. 36–62. With 3 charts and 1 map in text. [15 refs.]

Augustine and Smillie find that, other factors favourable for development being equal, the development of hookworm larvae depends on the physical texture of the soil, the largest number developing in sandy soil and the smallest in clay. The incidence of infection is greatest in sandy districts, and they suggest that experiments similar to theirs should be made locally by health officers within the hookworm belt, to test whether the soil is suitable or not for the development of the larvae.

T. W. M. C.

AUGUSTINE (Donald L.). **Studies and Observations on Soil Infestation with Hookworm in Southern Alabama from October 1923 to September 1924.**—*Amer. Jl. Hyg.* 1926. Mar. Supp. Vol. 6. pp. 63–79. [6 refs.]

While the natural mortality among hookworm larvae is normally high, Augustine was unable to find any infective larvae from the end of

December to the end of February in polluted soils, owing to the low local temperature. Dry periods during spring and summer also checked development entirely in sandy soils.

T. W. M. C.

CHANDLER (Asa C.). **Soil Acidity and Survival of Hookworm Larvae.**—*Indian Med. Gaz.* 1925. Oct. Vol. 60. No. 10. pp. 462–464. [1 ref.]

HIRST (L. Fabian). **Soil Acidity and Survival of Hookworm Larvae. A Critical Commentary.**—*Ibid.* 1926. Jan. Vol. 61. No. 1. pp. 14–17. [7 refs.]

CHANDLER (Asa C.). **Soil Acidity and Survival of Hookworm Larvae. A Reply to Dr. HIRST'S Critical Commentary.**—*Ibid.* pp. 17–18.

Chandler finds that the acidity in normal soil—at least up to a pH value of 5·5—does not interfere with the survival of hookworm larvae; and he criticizes a statement by HIRST (this *Bulletin*, Vol. 21, p. 968) that " a markedly acid reaction is also most unfavourable to the continued survival of hookworm larvae."

Hirst points out that CHANDLER is obviously referring to infective larvae, whereas he was referring to larvae in the pre-infective stage as well. He believes that pot experiments cannot present the true maximum of longevity of hookworm larvae, owing to the essential introduction of artificial procedures. Length of life depends mainly on good cultivation, and delicate larvae would survive only for a short time.

Chandler agrees with HIRST. He had considered the development and the survival of larvae as separate problems. He considers that these experiments can only be properly carried out by exposing the stool to the natural influence of beetles, etc., on specially selected ground.

T. W. M. C.

CHANDLER (Asa C.). **The Pathogenic Effects of Helminthic Infections.**—*Indian Med. Gaz.* 1926. Apr. Vol. 61. No. 4. pp. 157–158. [7 refs.]

Discussing the clinical effects of light hookworm infestations, Chandler was unable to find any alteration in haemoglobin in Indians, but he concludes that sufficient data are not yet available definitely to decide the point.

T. W. M. C.

FÜLLEBORN (F.). Eine Methode zur Isolierung von Hakenwurm- und anderen thermotaktischen Larven aus Gemischen mit freilebenden Erdnematoden. [**A Method for the Isolation of Hookworm and other Thermotactic Larvae from Mixtures of Free-Living Nematodes.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Oct. 15. Vol. 29. No. 10. pp. 470–478. With 5 text figs. [14 refs.]

The author comments on the difficulty of separating hookworm larvae from free-living nematodes in extracts of soil, faeces mixtures made by the Baermann method, particularly if the larvae have broken out of their sheaths.

After numerous experiments he arrived at a useful device, which is made as follows.

A hollow wire gauze cylinder of very fine mesh (about 120 to the inch) is constructed, about 5 cm. in diameter with a bottom of the same material, and is sewn together with thread It is placed in a Petri dish and melted agar is poured into it to a depth of about 3 mm so that when cold the bottom will be covered with a layer of agar of this depth Whilst the agar is still fluid, a paper ring, the edges of which have been gummed together and about 4 cm in height is placed inside the gauze cylinder, the bottom edge of the paper resting on the bottom of the structure The melted agar penetrates the paper by being gently shaken to and fro The agar layer must not be more than 3 mm deep He uses a 1 5 per cent agar medium diluted so as to give a 0 75–0 5 per cent strength for providing the agar layer When this is cold a layer of fine sand is sieved on to the surface of the agar to a depth of 3 mm Water containing larvae and free-living nematodes in suspension is then poured on to the sand to a height of not more than 1 cm and must not be too high on the other hand the sand must remain covered with water The apparatus is then placed in a Petri dish with its edges resting on two narrow strips of glass, about 1 5 mm thick lying on the bottom of the dish From 2–3 ccm of water are put into the dish in contact with the lower surface of the agar For ensuring the requisite heating the apparatus is placed on a water bath consisting of two large glass dishes one inverted inside the other the lower one containing water and resting on a copper plate which is heated below by a small flame By heating the water in the bath to 55°–60° C the water inside the wire gauze cylinder on the sand will be raised from room temperature to about 38° C in from 15 to 20 minutes and the water in the Petri dish in contact with the lower surface of the agar will have reached about 45° C After cooling for 15–20 minutes the apparatus may be heated again By this means the hookworm and Strongyloides larvae can be collected in a small quantity of water below the agar after twice or even sometimes only once, warming the apparatus whilst the free-living nematodes are unable to penetrate the agar layer

R T L

CHANDLER (Asa C) **Notes on some Methods for Diagnosis of Hookworm Infection and for estimating the Egg Output.**—*Indian Med Gaz* 1925 Sept Vol 60 No 9 pp 403–406 [7 refs]

After comparing several methods in use for the recovery of hookworm ova from stools Chandler concludes that the substitution of Lane's D C F ' technique for the Stoll technique is impracticable mainly on account of the extra labour involved in counting the large number of ova The dilution technique he finds to be as accurate as LANE's and much less troublesome to count

T W M C

CALDWELL (Fred C) & CALDWELL (Elfreda L) **A Dilution-Flotation Technic for Counting Hookworm Ova in Field Surveys.**—*Amer Jl Hyg* 1926 Mar Supp Vol 6 pp 146–159 [8 refs]

Caldwell and Caldwell have developed a dilution flotation technique for the detection of hookworm eggs in which they use antiformin (to dissolve the mucus) and sugar solution (to retard movement of ova, increase viscosity, and so make a more homogenous suspension, this material is also more easily obtained in the tropics than many other materials—including salt) The steps of the technique are as follows.

1 Weigh, by difference 4 gms of stirred faeces into a 40 mil tube

2 Add 4 mils of antiformin, stir with a glass rod and set aside for an hour

3 Add sugar solution (sp gr about 1 230) to the 40 mil mark

4 Stir, remove rod, and secure suspension by bubbling through a bacteriological pipette

5. Remove with the pipette, ·1 mil. of the suspension.

6. Count the ova in this ·1 mil. and multiply by 100, to obtain the ova per gram.

Two or more counts are made, but they consider that only one is necessary to classify individuals in intensity groups.

T. W. M. C.

STOLL (Norman R.) & HAUSHEER (Walter C.). **Accuracy in the Dilution Egg Counting Method.**—*Amer. Jl. Hyg.* 1926. Mar. Supp. Vol. 6. pp. 80–133. With 3 text figs. [22 refs.]

Stoll and Hausheer have made an exhaustive series of tests with the former's dilution technique and the Lane technique for the isolation of hookworm eggs. They find that they secure higher average counts with the dilution technique and they re-affirm their belief that it is accurate to within 10 per cent. of the absolute number of eggs present The shortcomings of the " D.C.F." technique are criticized and analysed.

T. W. M. C.

STOLL (Norman R.) & HAUSHEER (Walter C.). **Concerning Two Options in Dilution Egg Counting: Small Drop and Displacement.**—*Amer. Jl. Hyg.* 1926. Mar. Supp. Vol. 6. pp. 134–145. With 1 text fig. [6 refs.]

Stoll's original technique is modified by (*a*) using 75 cmm. drops instead of 150 cmm. drops of the suspension for counting and either multiplying each count by 200, or adding two together and multiplying by 100; and (*b*) by using a measured quantity of faeces instead of a weighed sample. The apparatus used is a 50 cc. Erlenmeyer flask, with a long neck, on which are marked 56 and 60 cc. marks. The flask is filled to the lower level with N-10 sodium hydroxide solution, and faeces added until the level of the fluid reaches the upper mark. Glass beads are added and a rubber stopper is used. The mixture is comminuted. Counts by this method should be recorded as eggs per cc. rather than as eggs per gramme.

T. W. M. C.

YOKOGAWA (S.) & OISO (T.). **Investigation on the Life-History of Ankylostoma and Strongyloides IV.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1926 Jan. No. 250. English summary pp. 5–6. [In Japanese.]

Continuing their series of experiments on the life histories of Ancylostoma and Strongyloides (this *Bulletin*, Vol. 22, p. 891, and Vol. 23, p. 269) the writers have compared the resistance to gastric juice of mature hookworm larvae before and after the passage through the lungs of the proper host and other animals, and find that the resistance of the latter is less than the former. They find also that the larvae do not possess any special properties after passage through the lungs, and that if fed to a second host they will migrate in the body of this animal also. They conclude that when mature hookworm larvae are fed to the proper host they will develop directly in the intestine, but that if fed to an unsuitable host they will attempt to escape from the unsuitable environment, and, following the line of least resistance, are carried to the lungs.

T. W. M. C.

VAN THIEL (P. H.). Verdere onderzoekingen omtrent de differentieeldiagnose van de strongyloïde larven van *Necator americanus* en *Anchylostoma caninum.* **[Further Research on the Differential Diagnosis between the Strongyloid Larvae of** *Necator americanus* **and** *Anchylostoma caninum.*]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1926. Vol. 66. No. 1. pp. 14–23. With 1 plate. [9 refs.]

The following points for differential diagnosis between human and canine hookworm larvae may be of practical value in the study of soil infestation :

1. The rostral part of the chitinous wall of the oral cavity (pharynx) is vase shaped in *Necator americanus*, much thinner (with some thickening on the dorsal side) in *Ancylostoma caninum.*

2. The transverse striae of the cuticule are much more pronounced in *Necator americanus* larvae than in those of *Ancylostoma caninum.*

3. The outline of the caudal bulbus of the oesophagus in Necator shows irregularities caused by glands embedded in the muscular wall. Such irregularities are absent in *Ancylostoma caninum.*

4. Behind the junction with the oesophagus, the intestine immediately appears as a wide tube in Necator, much narrower in *Ancylostoma caninum.*

5 (erroneously 6 in text). The tail of Necator is much longer (about 1/5 of the total length) and sharper than that of *Ancylostoma caninum* (1/6 or less of the total length).

W. J. Bais.

MAPLESTONE (P. A.). **Observations on the Development of Hookworm Larvae. Parts I and II.**—*Ann. Trop. Med. & Parasit.* 1926. Feb. 11 & June 24. Vol. 20. Nos. 1 & 2. pp. 49–58. [7 refs.] ; pp. 167–173. [2 refs.]

It has been stated that salt has an adverse influence on hookworm eggs and larvae. Using artificial cultures (mainly of Necator) Maplestone finds that sea sand and water have no effect on the development of the eggs and larvae.

Continuing the series of experiments, Maplestone finds that urine has a definite destructive effect on eggs and newly hatched larvae. After four days' complete immersion in water, 25 per cent. of the eggs were destroyed and the number of viable eggs decreased as the time increased.

T. W. M. C.

BISHOP (H.). **Notes on the Use of Carbon Tetrachloride (CCl_4) in Trinidad and Tobago.**—*Jl. Port-of-Spain Med. Soc.* 1924. pp. 21–24.

Bishop used carbon tetrachloride in over 25,000 cases of hookworm infection in Trinidad and Tobago. No preliminary purge was given, but patients were enjoined to abstain from alcohol and take sugary food for 24 hours prior. A light meal was allowed at 6 a.m., and the drug given between 7 and 8 a.m., followed in an hour by Epsom salts. Ascarid infection was treated with chenopodium alone or with carbon tetrachloride. Only 12 cases of illness were noted—chiefly after chenopodium. He finds carbon tetrachloride less disagreeable than chenopodium and more effective against hookworm.

R. T. L.

HAUSHEER (W. C.). **Recent Methods in the Diagnosis and Treatment of Ankylostomiasis.**—*Jl. Port-of-Spain Med. Soc.* 1924. pp. 4–18. With 1 plate. [10 refs.]

Hausheer discusses the value of carbon tetrachloride as an anthelmintic and its use in Trinidad. 2 cc. in a hard gelatin capsule are given followed within an hour by 2 oz. of magnesium sulphate. Children under ten years are not treated. Ascaris cases were given chenopodium. He found that in a test series of 1,000 cases there were nearly 90 per cent. of cures after two doses of carbon tetrachloride, compared with 53 per cent. after two doses of chenopodium.

R. T. L.

KINGSBURY (A. Neave). **On the Carbon Tetrachloride Treatment of Ankylostomiasis with a Note on the Hookworms of Penang.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. Jan 21 Vol. 19. No. 7. pp. 397–404. [7 refs.] also in *Jl. Trop. Med. & Hyg.* 1926. May 1. Vol. 29. No. 9. pp. 139–142

Carbon tetrachloride has been used in 143 cases of hookworm infection in Penang. The percentage of worms expelled following the first treatment was 84 per cent —Necator being more easily expelled than Ancylostoma Five cases died subsequently from other causes About 30 per cent. of the cases complained of nausea, thirst or of a burning sensation in the epigastric region. In a few cases a transient nephritis was observed, and in one a temporary albuminuria.

R. T. L.

INSFRÁN (José V.). **Treatment of Hookworm Disease in Pregnant Women with Carbon Tetrachloride.**—*Jl. Amer. Med Assoc.* 1926. Mar. 13. Vol. 86. No. 11. pp. 735–736. [4 refs]

Insfrán finds that carbon tetrachloride—on the basis of 225 women treated—may be given to pregnant women without untoward results.

T. W. M. C.

CASTRO (Mendonça). O tetrachloreto de carbono no tratamento da uncinariose. [**Carbon Tetrachloride in the Treatment of Ancylostomiasis.**]—*Arch. Brasileiros de Med.* 1924. Mar. Vol. 14. No. 3. pp. 211–223. [10 refs.]

It is stated that carbon tetrachloride does not deteriorate. It has many advantages over chenopodium, being palatable and causing no depression. It can be taken without a purgative. It acts on the liver by stimulating the biliary secretion. There is a hypersecretion of mucus in the bowel. Sometimes the drug causes abdominal pain. The symptoms of toxicity are few: vertigo, slight nausea, cephalalgia, somnolence, and usually transitory in character. Deaths occur, however, from a large dose, from impurity of the drug, and in these cases the liver at autopsy showed marked changes. It is recommended that no saline purge be given immediately after the drug as this appears markedly to increase its irritant action on the intestinal mucosa. For children, chenopodium and carbon tetrachloride can be mixed, thus securing the expulsion of *Ascaris lumbricoides*. In default of capsules carbon tetrachloride may be given in water. Alcoholics and those with heart, liver or kidney disease and cases of infectious diseases with acute intestinal symptoms should not be treated. Any treatment by this drug should precede an administration of chloroform for anaesthesia by several days.

R. T. L.

KHALIL (M.). **Note on the Toxicity of Carbon Tetrachloride in the Treatment of Ankylostomiasis.**—*Lancet*. 1926. Mar. 13. pp. 547–548. [3 refs.]

Khalil finds that some samples of " pure " carbon tetrachloride are toxic to laboratory animals, and he believes that this is due to sulphur compounds which distil at temperatures under 76° C. Carbon bisulphide was added to carbon tetrachloride without ill effects to laboratory animals (including monkeys), but the actual sulphur compounds which make the pure drug toxic have not yet been found. It has been found possible to eliminate them, however, by fractional distillation and discarding the first 1 per cent. distilled over. Using 5 cc. doses of the drug, thus treated, over 150,000 cases have been treated with only one fatal case—an old man addicted to opium and alcohol. Khalil finds that 5 cc. is the most effective dose for *Ancylostoma duodenale*.

T. W. M. C.

MANALANG (C.). **Ankylostomiasis : Comparative Efficiency of Carbon Tetrachloride, Chenopodium and Thymol in the Treatment of Hookworm Infection.**—*Jl. Trop. Med. & Hyg.* 1926. Apr. 1. Vol. 29. No. 7. pp. 101–103.

Manalang has tested the relative value of carbon tetrachloride, chenopodium and thymol against hookworm, and finds that the first (1 cc per 7 kg. body weight) removed 95·2 per cent. of ancylostomes and 98·8 per cent. of necators at the first treatment, chenopodium 72 and 91 per cent. respectively, and thymol 64·3 and 74·8 per cent. Carbon tetrachloride is also more rapid in its action.

T. W M. C.

SWEET (W. C.). **The Treatment of Hookworm and Ascaris Infections with Carbon Tetrachloride and Oil of Chenopodium.**—*Ceylon Jl. Sci.* (Section D. Med. Sci.). 1925. Nov. 18. Vol 1 Pt. 3. pp. 121–128. [2 refs]

In a country like Ceylon, where infection with *Ascaris lumbricoides* is general, the comparative failure of carbon tetrachloride to remove these worms is stated to be a serious drawback. A combination with oil of chenopodium would be ideal for field work, and the simultaneous administration of the dose of sulphate of magnesium would further enhance the value of the combination by saving in time and money. With these aspects of the problem in mind, the author carried out a series of tests in the Boganbara Jail, Kandy, Ceylon. The results are set out in detail showing that the most efficient combination for removing hookworms was carbon tetrachloride and oil of chenopodium in a ratio of 3 to 1 given in a solution of mag. sulph. for a purge. The giving of salts with the anthelmintic apparently delayed the expulsion of the majority of the worms of both kinds until the second day after treatment but increased the efficiency of the test in removing the hookworms.

R. T. L.

PESSÔA (Samuel Barnsley). Estudo dos componentes do oleo essencial de chenopodio. Sua applicação na prophylaxia da ancylostomose. **[The Components of the Essential Oil of Chenopodium. Prophylaxis of Ancylostomiasis.]** 2a Edição.—*Instituto de Hygiene.* S. Paulo. Bol. N. 13. 71 pp. [50 refs.]

The essential oil of chenopodium is composed of a mixture of (*a*) Terpenes, some of which are already identified as the terpinene and paracymene as well as of another, not yet identified, in the proportion of 20–30 per cent. ; (*b*) Traces of fatty acids, traces of salicylic acid and of 0·5 per cent. methyl salicylate ; (*c*) About 50–70 per-cent. of ascaridol, an organic peroxide of the formula $C_{10}H_{16}O_2$; (*d*) Small portions of an isomer of ascaridol, the glycol anhydride or its corresponding hydrate.

The terpenes do not possess any vermicidal property. The author has never observed any toxic symptoms due to them either in animals or man.

The methyl salicylate, even in doses of 2 cc. for adults, induced neither vermicidal nor toxic effects. The isomer of ascaridol as well as the glycol hydrate also do not reveal perceptible vermicidal effect. These latter are toxic in animals only in large doses (1 cc. per kilo.) ; in man, the maximum dose of 1·5 cc. produces slight symptoms of intoxication.

Ascaridol is a strong vermifuge. Administered as indicated by the author, 1 cc. ascaridol expels about 95 per cent. of the hookworms. It has toxic effects upon dogs, causing their death in doses of 0·10–0·20 cc. per kilo. In man, 1·5 cc. of ascaridol produces toxic symptoms equivalent to those produced by 2 cc. of ol. chenopodii. The toxic symptoms determined by ascaridol are similar to those following the administration of chenopodic oil.

The optimum dose of ascaridol is 1 cc. given at one time in a solid gelatine capsule. It should be administered in the morning, on an empty stomach ; a preliminary purgative is not necessary. A saline purgative should be administered half an hour after the capsule has been given.

The dose for children up to 5 years is 1–2 drops of ascaridol in an emulsion of 10–20 cc. of castor oil ; for those of 6 to 15 years, for each year of age 1 drop (in a gelatine capsule), followed half an hour later by a saline purge, e.g. magnesium sulphate ; for those from 15 to 17 years 1½ drops for each year of age, and for adults, 30 drops and afterwards a purgative.

With this procedure the toxic symptoms will be nil, or very mild ; moreover, the number of worms expelled will be as great as it would be if the purgative was given 2 hours later.

Ancylostoma duodenale shows a greater resistance than *Necator americanus* to ascaridol.

The same specimen of ascaridol used for a year and four months from the beginning of these experiments has not undergone any change, either of its vermifuge or its toxic qualities. The author regards it as an advantageous substitute for the chenopodic oil in campaigns against ancylostomiasis.

R. T. L.

SHELLEY (H. M.). **The Treatment of Ankylostomiasis by Glycerine.**—*Kenya Med. Jl.* 1926. Mar. Vol. 2. No. 12. pp. 330–333.

Shelley has used glycerine in 3–5 dram doses preceded the previous evening and followed the next morning by ounce doses of magnesium sulphate, in 22 cases with apparently successful results.

T. W. M. C.

TSUNASHIMA (Y.). Pharmakologische Untersuchungen des vegetativen Nervensystems bei Anchylostomiasis und anderen. [**Pharmacological Investigation of the Visceral Nervous System in Ancylostomiasis and other Conditions.**]—*Okayama-Igakkai-Zasshi.* 1925. Aug. No. 427. German summary p. 871. [In Japanese.]

The pharmacological action of atropin, adrenalin and pilocarpin on a case suffering from ancylostomiasis has been tested. Of 11 patients with anaemia and eosinophilia to whom adrenalin was administered, only two reacted strongly; one gave an entirely negative result, the others were slightly positive. With pilocarpin there was considerable reaction save in one case. With atropin all reacted, but some to a slighter degree than to pilocarpin. It is concluded that in ancylostomiasis there is an increase in the " labilite " of the parasympathetic nervous system, especially of the vagus. The reaction to atropin increases with the administration of thyroidin as in cases of diabetes and morphinism.

R. T. L.

JOSEPH (Hugh P.). **Clinical Notes on the Effects of a Nematode Larva in the Eye.**—*Ceylon Jl. Sci.* (Section D. Med. Sci.). 1925. Nov. 18. Vol. 1. Pt. 3. p. 143.

NICHOLLS (Lucius). **Note on a Nematode Larva removed from the Eye of a Man.**—*Ibid.* p. 145. With 3 figs. on 1 plate.

A Tamil estate labourer was found suffering from an irritable and painful right eye of seven days' duration on admission to the Victoria Memorial Eye Hospital, Colombo. Seven days later a nodular mass was seen on the attached border of the iris and bulging into the anterior chamber at its lower and outer quadrant. Eight days later, a small white worm was seen emerging spontaneously from the mass into the anterior chamber, where it was observed moving freely on the following day. The anterior chamber was incised under cocaine, and the worm removed. Dr. Nicholls gives three microphotos of the worm, which was immature, 11·4 mm. long, unarmed at the mouth and with a cuticle without striation. The oesophagus measured 1·7 mm., the excretory pore 0·22 mm., and the vulvar orifice 0·5 mm. from the anterior end. The posterior end has a terminal spine.

R. T. L.

KIRBY-SMITH (J. L.), DOVE (W. E.) & WHITE (G. F.). **Creeping Eruption.**—*Arch. Dermat. & Syph.* 1926. Feb. Vol. 13. No. 2. pp. 137–173. With 17 figs. [33 refs.]

Creeping eruption is a common disease in Florida, and is due there to a microscopical nematode. The eruption is linear, tortuous and serpiginous accompanied by intense itching; sometimes bullae are formed, and with the drying of the surface of the lesion a thin crust forms. A clinic of ten days was held at Jacksonville, and 179 cases were observed, making a total of 300 seen during the summer of 1924. Pieces of skin removed were sectioned and the larval nematode found therein were submitted to Dr. B. H. RANSOM, of the U.S. Bureau of Animal Industry, who gave a guarded opinion that the forms named *Agamonematodum migrans* were third stage larvae resembling larvae of the superfamily of nematodes known as Strongyloides [? Strongyloidea]. At least 50 per cent. of the cases seen by the senior author were traced to the beach and probably originated at points slightly above the high tide water mark. There is a definite seasonal prevalence during the summer months, and mostly following periods of rainy weather. The paper gives details of cases and is illustrated profusely with a very fine series of microphotographs of sections of the worm in tissues, together with representations of the various types and stages of the eruption. Treatment by refrigeration and with ethyl acetate has been successful.

R. T. L.

BERIBERI.

CHUN (J. W. H.) & WU LIEN TEH. **Beriberi Control from an Administrative Standpoint.**—*Oriental Jl. Diseases of Infants.* Kyoto. 1926. Jan. Vol. 1. No. 1. English summary pp. 25–35. [37 refs.] [In Japanese.]; and *Nat. Med. Jl. China.* 1926. Feb. Vol. 12. No. 1. pp. 9–20. [Numerous refs. in footnotes.]

While accepting the vitamin theory of beriberi, the authors refer to the various secondary factors, such as deterioration by storage, cooking, etc., and the resolutions passed by the Far Eastern Association of Tropical Medicine are given in full. The measures recommended are " legislative and educational." The provision of undermilled rice by subsidized mills is advised, which rice should be used for public institutions, prisons, asylums, hospitals, road and railway camps, etc. The elimination of beriberi in these would be a convincing demonstration for propaganda purposes. Prohibition of white rice or taxing it is not considered feasible. From an educational point of view the slogan " no overmilled rice no beriberi " is accepted, and with this the importance of care in storing and cooking and the addition of accessory the foods is emphasized. The medical profession must be able to recognize early cases and illustrative pamphlets must be distributed very widely. The people having been educated to recognize the value of the undermilled rice, this must be available. Finally it is necessary to remember that hygienic living as well as proper diet is required.

P. W. Bassett-Smith.

TRABAUD. Quelques particularités cliniques et pathogéniques du béri-béri [**Some Clinical and Pathogenic Peculiarities of Beriberi.**] —*Rev. Méd. et Hyg. Trop.* 1926. Jan.–Feb. Vol. 18. No. 1. pp. 5–12.

The want of properly equipped workers in the endemic areas is, according to the author, the reason why the knowledge of beriberi is so imperfect and contradictory. While he was working in the Levant he was not so handicapped, and he there made a special study of the differential diagnosis between " wet " beriberi and nephritis. It has been stated that the oedema and ascites of beriberi are to be distinguished from those of nephritis by the absence of albumen in the urine , this one factor is not now enough ; knowledge of the amount of urea, chlorine, etc., is required as well. Albumen is not uncommon in the urine of beriberi, but *without doubt the quantity is not sufficient to account for the gravity of the symptoms.* In Syria the cases were not at first recognized as beriberi. The author declares that the oedema is not due to nephritis, neither is it of cardiac origin, but to a neurosis of a vasomotor character. The question of an initial fever is debated, since this is an important factor for the theory that beriberi is an infectious disease. The author very rarely observed any fever during the first 3 or 4 days ; as a general rule, the temperature curve does not run parallel with the intensity of the symptoms. The early rise in the temperature occasionally seen is considered to be due to elective toxic action upon the peripheral and sympathetic nerves, causing the crises and oedemas. There were six fatal cases, all sudden and unexpected ; these were carefully examined and specimens were sent to Val-de-Grace, Paris, for microscope report. No evidence of renal or cardiac degeneration was found. That there is an infection of the vago-sympathetic system is supported by the pseudo-anginal and visceral crises noted by SOLIER, JEANSELME and others. The author's physio-pathological researches show that through the lack of certain foods there is a kind of intoxication having a selective action upon parts of the nervous system, the actual clinical conditions depending upon the nerves mostly affected—sympathetic, peripheral, or special as the pneumogastric.

[Most of these deductions were made long ago by Sir Patrick MANSON.]

P. W. B-S.

TAKANO (Rokuro). **Statistical Observation on Beriberi in Japan.**—*Japan Med. World.* 1926. Jan. 15. Vol. 6. No. 1. pp. 8–10.

The author shows that beriberi is not on the decrease in Japan, for the death rate per mille in 1923 was higher than any year since 1914. That of breast-fed infants exceeded all others. It is most common in city dwellers in the hot months. In the army and navy, however, there was very little.

P. W. B-S.

SENGA (H.) & YASUTOMI (Y.). **On the Basal Metabolism in Beriberi.**—*Jl. Oriental Med.* 1926. Jan. Vol. 4. No. 2. English summary p. 18. [In Japanese.]

It was found that in both cardiac and oedematous forms of beriberi the metabolic rate showed a marked increase during the acute stages, followed by a gradual fall with improvement of the symptoms. In cases of atrophy there was a marked diminution of the basal metabolism.

P. W. B-S.

TUNG (C. L.). **Report of a Case of Myxoedema simulating Beriberi.**—*Nat. Med. Jl. China.* 1926. Apr. Vol. 12. No. 2. pp. 142–151. [7 refs.]

The patient, a Chinaman aged 30, was admitted for general weakness and swelling of the face and lower extremities, with a history of 17 years' illness. He had been admitted to or attended various hospitals, and had been treated for beriberi. Both legs were enlarged with pitting on pressure, there was tenderness of the calf and thigh, and the left patellar reflex was obtainable only on reinforcement. Tactile sensation was present but dull. An anti-beriberi régime was begun, but it was soon noticed that the average oral temperature was less than 97° F. and the average pulse rate 64. Administration of thyroid extract gave rise to steady improvement. The author observes :—

> " Beriberi can be easily confounded with mild cases of hypothyroidism, if patient only mentions swelling, anaemia, weakness, pain in the muscles of the lower extremities as complaints, if the examiner fails to probe into the details of the history, or if examination has been casual and not discriminating. In our case, these are exactly the pitfalls, especially as there is *real oedema* of the legs, in addition to myxoedematous changes."

Disorders of the thyroid are very rarely met with in East China, whereas beriberi is a common disease.

A. G. B.

HOFFMANN (W. H.). El beriberi experimental en los batracios. [**Experimental Beriberi in Tadpoles.**]—*Acad. de Ciencias med. fisicas, y naturales de la Habana.* 1925. Nov. 25. 2 pp.

——. Beriberi bei Froschlarven.—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Mar. 1. Vol. 30. No. 3. pp. 132–134.

The author carried out feeding experiments with larvae of *Hyla septentrionalis.* He took 60–80 of these and divided them into two groups. One group he fed on mangoes, the other exclusively on bread. The former developed in 14–19 days, the normal period, the latter took 36–62 days. These latter also suffered from paresis passing to definite paralysis of the limbs with atrophy, and shortly before death, which invariably occurred, oedema of the abdominal region. If, however, the food was changed to fruit, insects, or meat, in the earlier stages of the symptoms, amelioration and even cure resulted. The histological changes are not yet completely examined, but the author regards the condition as being similar to, perhaps identical with, human beriberi, which is therefore probably a form of avitaminosis and not of infective origin. As these animals are easy to deal with he suggests their employment for experiment in this direction. Mangoes might be good treatment for human beriberi.

H. Harold Scott.

FARNUM (Martha B.). **Gastric Secretion in Experimental Beriberi in the Dog.**—*Arch Intern Med.* 1926. Feb. 15. Vol. 37. No. 2. pp. 212–216.

It is stated that in a number of cases of beriberi observed clinically a diminution of the gastric secretion has been noted. Experiments on dogs, which were fed upon a beriberi-producing diet, showed not only a decreased acidity but diminished secretion of the gastric juice. In the author's experiments " Pawlow pouch dogs " were used ; in these it took 31–35 days to produce severe symptoms of beriberi, but the lowered acidity and decreased secretion of gastric juice was observed several weeks before The author showed, also, that the alkali (sod. carb), added in the autoclaving process of the food, destroys the anti-neuritic vitamin, and that this vitamin does not itself stimulate gastric secretion. In cases of severe beriberi in dogs injections of histamine-hydrochloride had 1½ to 3 times less stimulating effect upon the gastric secretory mechanism than in healthy animals, and injections of gastrin had still less action. Many tables are given illustrating these points.

P. W. B-S.

HORVATH (A. A.). **Soy Sauce as a Stimulative Agent in the Development of Beriberi in Pigeons.**—*Proc. Soc. Experim. Biol. & Med.* 1926. Apr. Vol. 23. No. 7. pp. 616–617. and in *Nat. Med. Jl. China.* 1926. Apr. Vol. 12. No. 2. pp. 176–177.

Various experiments have shown that beriberi in pigeons may be produced by some toxin absorbed from the intestinal tract. Soy sauce may, besides stimulating digestion and absorption, stimulate the production and absorption of the toxic substance. Seven pigeons were examined to determine if this was the case or not ; within a month five of those which received soy sauce developed beriberi, whereas the five controls escaped. In one case death occurred on the sixth day with symptoms of acute intoxication. From these experiments [which are few] the author concludes that soy sauce does in pigeons stimulate the onset of beriberi.

P. W. B-S.

MONTES (José E.). La pleuresia beribérica.—*Los Progresos de la Clin.* Madrid. 1924. May. Year 12. No. 149. Vol. 27. No. 5. pp 577–593. With 5 text figs. [2 refs.]

OGATA (Tomosaburō), KAŬAKITA (Ŝintarō), SUZUKI (Susumu) & KAGOŜIMA (Ŝigeru). Pri la rizmalsano de birdoj (dua raporto) Precipe pri la rizmalsano kaŭzita per nutraĵo rilate manka je vitamino-B.—*Mitt. a. d. Med. Fak. d. Kais. Univ Tokyo.* 1925. Vol 32. No 3. pp. 431–560. With 8 charts in text. [22 refs.]

——, ——, —— & —— Pri la kvanto de vitamino B rezervita en organoj ĉe beribero kaj la komparo kun tiu ĉe malsano pre manko de vitamino B (rizmalsano).—*Mitt. a d. Med. Fak. d. Kais. Univ. Tokyo* 1925 Vol 32 No. 3. pp. 561–604

SCURVY.

ALALOU (M.). Remarques à propos d'une épidémie de stomatites ulcéromembraneuses et scorbutiques. [**An Epidemic of Ulcero-Membranous and Scorbutic Stomatitis.**]—*Bull. Soc. Path. Exot.* 1926. Jan. 13. Vol. 19. No. 1. pp. 5–6.

In the Mossul area a dozen cases of stomatitis were observed among 14,000 men. In some the ulceration was scorbutic, in others there was a mixed infection. The gums were most often affected; the ulcers may be covered by false membrane, and are painful, but rarely phagadenic. The organism of Vincent's angina is frequent, and the teeth become loosened. Keratosis of the skin of the lower limbs is also found. It is noted that the condition was seen mostly in men debilitated during the war whose diet had been insufficient. Iodine, permanganate, chlorate of potash and neosalvarsan gave unsatisfactory results, but local applications of chromic acid crystals were effective.

P. W. Bassett-Smith.

DJÉMIL (Said). Kératoses pilaires préscorbutiques. [**Prescorbutic Keratosis Pilaris.**]—*Bull Soc. Path. Exot.* 1926. Jan. 13. Vol. 19. No. 1. pp. 6–8 [2 refs]

The author draws attention to this condition of the skin as an early indication of a scorbutic state when it is associated with anaemia, lassitude and rheumatic pains. It is most commonly seen in the lower limbs; the thickened points may be grey or red and may be followed by petechial spots but are rarely associated with typical haemorrhages or gingivitis. The follicular thickening has been frequently referred to by LE DANTEC, DE LA MERE and others in the Macedonian area during the war, and these observations are here confirmed in Greeks evacuated from Anatolia.

P. W. B-S.

HOLST (Axel) & FLEISCHNER (Wilhelm). Ein Beitrag zur Frage der Konservierung antiskorbutischer Nahrungsmittel. [**The Preservation of Antiscorbutic Foods.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 163–168. [3 refs.]

In continuation of previous work an endeavour was made to find better means of preserving the antiscorbutic value of vegetable foods for the mercantile marine. In these experiments the tests were restricted to drying cabbage without destroying the vitamin C.

Drying by desiccation, drying and briquetting with sugar, were unsuccessful as the antiscorbutic value was quite lost in a year. Continuous drying was also ineffective. Chemical methods with P_2O_5 gave very good results but were impracticable on account of expense. Formaldehyde preserved the cabbage for 9–10 months at 37° C. without the necessity of complete drying, which points to the conclusion that the change in the antiscorbutic vitamin is due to an enzyme, but formalin has the disadvantage that, though it may not change the colour and taste of the substance, it can be detected chemically and would render the food bad for health. Further experiments are being conducted to destroy the enzyme without injuring the food. It is probable that the same method will not be applicable to all foods, and we do not even know that the vitamin is in all foods the same, thus dandelions lose their activity after a week's drying at 37° C., while cabbage does not.

P. W. B.-S.

REYHER. Zur Frage des Gehaltes der Frauen und Kuhmilch an antiskorbutischen Stoffen. (Zugleich ein Beitrag zur Säuglingsmilchfrage.) [**The Content of Human and Cow's Milk in Antiscorbutic Substances.**]—*Arch. f. Kinderheilk.* 1926. Vol. 77. No. 3. pp. 161–194. With 4 figs. and 16 curves. [9 refs.]

This is a very long and argumentative paper discussing much by FROLICH, MEYER & NASAU, FRANKS, SCHMIDT and others that has already been reviewed here. The results of experiments are very fully put forward with tables, charts, radiograms, etc., which demonstrate the following points: Eleven guineapigs of about 250 gms. fed upon oats and 20–30 gms. of human milk given daily, *by means of a pipette*, never showed any sign or symptom of scurvy; the animals died from inanition, probably due to lack of albumen and salts, for the diet contained a sufficiency of antiscorbutic substances. Cow's milk obtained from farms near Berlin and infant clinics, winter and summer milk, boiled and unboiled, fresh and dry, under various conditions were tested on 26 guineapigs. The author is in complete agreement with MEYER & NASAU as to the value of guineapigs in testing the antiscorbutic properties of milk for use in clinics, for often, when no symptoms are present, radiograms showed histological evidence of scurvy. He emphasizes the importance of recognizing the variability of the vitamin content in cow's milk according to the feeding of the animals, whether in winter or summer, etc. For experimental and clinical work the original vitamin content should be estimated, and this is specially important when preparing dried milk. In his opinion, boiling for two minutes distinctly reduces the antiscorbutic value of cow's milk. For infant's milk, the cows must be free from tubercle, in good condition, and well fed with regular and sufficient green fodder summer and winter, rich in vitamin C; the milk should be used raw. He pessimistically says that the problem of getting really good milk for children in Berlin has made no real progress, and the provision of winter milk is still less satisfactory.

P. W. B-S.

WOLBACH (S. Burt) & HOWE (Percy R.). **Intercellular Substances in Experimental Scorbutus.**—*Arch. of Path. & Lab. Med.* Chicago. 1926. Jan. Vol. 1. No 1. pp. 1-24. With 16 figs. [3 refs.]

This report gives the results of careful work and study to determine the pathological characters found in scurvy. It is pointed out that ASCHOFF & KOCH, and HÖJER found very similar histological changes, but that whereas HÖJER ascribed the deficient bone formation to a degeneration of the bone forming cells, these being so changed that in time their activity entirely fails, the former find that the cessation of new bone formation and rarefaction of existing bone, with irregularities and absorption of cartilage columns, leads to a zone of fragmentation adjacent to the line of junction with the cartilage; the osteoblasts assume elongated shapes and apparently disappear from regions; the zone becomes filled with loose textured connective tissue structure described as oedematous or gelatinous. The osteoblasts fail to form osteoid tissue because of a want of essential materials and the authors postulate a failure of cementing substance in the blood vessels, thus accounting for the haemorrhages.

The work of the authors was carried out on guineapigs in a state of absolute scurvy and during early repair, following the administration of antiscorbutics, noting changes in the incisor teeth, changes in the bones, changes in the repair of soft tissues, and in the repair of bone injuries. The results corroborate and extend the deductions of ASCHOFF & KOCH, so that the authors characterize the scorbutic state as one due to the inability of supporting tissues to produce intracellular substances and to maintain existing intracellular substances. They finally advance the theory that the failure of cells to produce intracellular substance in scurvy is due to the absence of an agent common to all supporting tissues which is responsible for the setting or jelling of a liquid product; the osteoporosis suggests further the hypothesis that the reaction is in some way a reversible one.

The details of the work are fully given, and beautiful illustrations of the various conditions found are inserted. For fuller information the original paper should be carefully read.

P. W. B-S.

MEDES (Grace) **Germinal Epithelium of Guinea Pigs during Early Stages of Scurvy.**—*Proc Soc. Experim. Biol. & Med.* 1926. Jan. Vol. 23. No. 4. p. 294.

Guineapigs on a scorbutic diet *plus* whole powdered milk though showing no signs of scurvy when histologically examined gave evidences of definite changes. In the testes engorgement and degeneration of the seminal epithelium of some of the tubes was seen. Guineapigs kept for 30–40 days in a state of chronic scurvy show almost complete recovery of the germinal epithelium after 17 days on anti-scurvy diet.

P. W. B-S.

WALLINGTON (K.T.K.) A Case of Arthritis and Stomatitis· possibly Scurvy.—*Kenya. Med Jl.* 1925 Apr Vol 2. No. 1. pp 25–26.

REVIEWS AND NOTICES.

CRAIG (Charles F.). [M.D., M.A. (Hon.), Lt.-Col., Med. Corps, U.S. Army, D.S.M., etc.] **A Manual of the Parasitic Protozoa of Man.**—pp. viii+569. With 95 text figs. 1926. Philadelphia & London: J. B. Lippincott Company. [Price 35s.]

The author explains in his preface that during a study of parasitic Protozoa extending over nearly thirty years, ten of which have been devoted to teaching, he has on many occasions felt the need of a manual in English which would adequately cover the field from the point of view of the medical man. To meet this need, which must have been realized by many who have been engaged in teaching the subject, the volume under review has been produced. It contains eighteen chapters and a technical appendix followed by an authors' and a general index. It is claimed that the book contains every known fact of real importance about the various parasites described and a perusal of the pages shows that this claim is amply justified. One chapter is devoted to a general consideration of the Protozoa, their classification, structure, physiology, reproduction and parasitism. Four chapters deal with parasitic and coprozoic amoebae, two with the parasitic and coprozoic flagellates of the intestine and their allies in other situations, four with the blood and tissue flagellates, one with the coccidia, four with the parasites of malaria, one with the sarcosporidia and one with the ciliates. Each organism is described under the following headings: Synonyms, History and Nomenclature, Morphology in Living and Stained Preparations, Resistance to Injurious Agencies, Habitat, Species Occurring in Lower Animals, Cultivation, Life-histories, Method of Reproduction, Geographical Distribution, Incidence of Infection, Method of Transmission, Experimental Infection of Lower Animals, Relation to Disease, Pathology, Prophylaxis and Diagnosis.

The information regarding the well-established parasitic Protozoa of man is accurate and exhaustive and, with certain reservations to be noted below, the student cannot go far wrong in accepting the book as a reliable guide to the subject. It is of convenient size and of durable materials. The print is good, while the matter is set out clearly under conspicuous headings. In most cases the illustrations are satisfactory, but some of the photomicrographs, particularly those illustrating the amoebae and malarial parasites, are not as clear as they should be. However useful photomicrographs may be for certain purposes they are of very doubtful value in a students' text book. It is the reviewer's opinion that a series of black and white drawings, even if of a diagrammatic type, would have been of much greater value in showing details of structure which are necessary for the student's instruction.

It is inevitable that certain discrepancies and errors of a minor nature should have crept in, while in certain cases it is the reviewer's opinion that the author has erred in adopting views which cannot be supported by the evidence and which are at variance with those of the majority of protozoologists. For instance, he is convinced of the existence of *Craigia hominis*, *Plasmodium falciparum* var. *quotidianum*, *Plasmodium vivax* var. *minutum* and *Plasmodium tenue*, and though it is frankly admitted that his opinions are not shared by others it is a pity, from the point of view of the student, that so much prominence has been given to them. Though statements such as these detract little from the general value of the book it will perhaps be useful to discuss them.

In the classification of the amoebae, the author adopts the genus *Endamoeba* and states that in his opinion there are three sub-genera, viz., *Endamoeba* for the form in the cockroach, *Poneramoeba* for the two common amoebae of man and *Endolimax* for *E. nana*. Nevertheless, he makes the somewhat paradoxical statement that owing to limited knowledge the sub-generic names should not be employed. On p. 220 the name *Bodo salivarius* is given to the flagellate seen by Knowles and Das Gupta in the mouth of a patient in Calcutta, though no evidence is produced that it is distinct from one or other of the well-known free-living forms. On p. 226 the definition of the kinetonucleus is involved. If any part of this structure is a blepharoplast it is certainly the basal granule, while the name rhizoplast is usually applied to the filament which connects the basal granule with the base of the flagellum on the surface of the body. It is certainly incorrect to apply the term blepharoplast to the deeply staining body which is connected in some way with the basal granule. The statements on p. 229 regarding the method of division of the kinetonucleus are of very doubtful value, while the process of schizogony of trypanosomes described on the same page, especially as regards the behaviour of the nucleus, is quite incomprehensible. It is highly improbable that such a process occurs.

Again, on p. 280 the reproduction of the leishmania forms of *Trypanosoma cruzi* is said to take place by schizogony as claimed by Hartmann, but no mention is made of the fact that the usual and generally accepted method of reproduction is by binary fission. In the description of the supposed latent bodies of trypanosomes on p. 242, the author states that in his belief the evidence is quite conclusive that they are vitally concerned in the life cycle of the trypanosome in man. It is the reviewer's opinion that there is no reliable evidence that this is the case. In discussing the relationship of *Trypanosoma rhodesiense* to *Trypanosoma brucei* (p. 264), the experiments of Taute and Huber, who inoculated 131 human beings with animal strains of *T. brucei* without producing a single infection, are quoted as being evidence amply sufficient to prove that the two trypanosomes are distinct. To believe that 131 men could be naturally immune seems to the author "almost too much of a strain on one's credulity." He says that there is no parallel instance in our knowledge of immunity. It may be noted, however, that Watson (1920) in attempting to isolate *Trypanosoma equiperdum* from horses in Canada succeeded in infecting a white mouse after hundreds of unsuccessful attempts with dogs, rabbits, guineapigs, rats and mice. When once established in the mouse the strain readily infected the other animals. It does not seem impossible to the reviewer that there may be a similar difficulty in *T. brucei* establishing itself in man, but that once established it is readily inoculable from man to man as *T. rhodesiense*. In connexion with *Trypanosoma cruzi* (p. 287), for which the author retains the generic name *Schizotrypanum*, mention is made of the fact that Yorke proposed the name *Trypanosoma escomeli* for a form described by Escomel which resembled *T. cruzi*, but was distinctly larger. It is not mentioned that Escomel subsequently redescribed the trypanosome and admitted that his previous measurements were incorrect and that the organism was actually *T. cruzi*.

On p. 342, in connexion with the transmission of South American leishmaniasis, no mention is made of the experiments of Aragão, who produced sores in a dog by inoculating crushed up Phlebotomus which had previously been allowed to feed on cutaneous lesions. On p. 333 it is stated that Patton found flagellates in *P. papatasii* in Macedonia. The locality should have been Mesopotamia, but actually Patton never found flagellates in these flies, his statements being purely conjectural, as he has informed the reviewer. With reference to the coccidia, it is hardly correct to say (p. 348) that until Dobell's revision in 1919 the classification was in a chaotic state. The classification of these organisms was well understood before this, Dobell merely showing that many supposed coccidia of man were not of this nature. It is unfortunate that the discovery by Thomson and Robertson that the supposed eimerias of man were merely those of fish passing through the intestine was made too late for notice in the volume. Under *Isospora hominis* (the form which the reviewer has named *I. belli*) it is stated (p. 352) that there is no evidence of its pathogenicity, the case of a laboratory infection resulting in definite symptoms described by CONNAL having evidently been overlooked.

On the question of malaria the author holds certain opinions of his own. Though he discards the view that relapses are due to parthenogenesis of female gametocytes, he introduces a theory which seems equally improbable to the reviewer (p. 369). He believes that resistant forms are produced by conjugation in the blood of man and that when fully formed they resemble gametocytes. The reviewer admits the possibility of two asexual forms within a red cell fusing as regards their cytoplasm, though he himself has failed entirely to see such a process in the living organism. Such a fusion, however, is not necessarily a conjugation, and before it can be regarded as such, very substantial evidence would have to be produced. Similarly, on p. 95, the author states that he has observed in *Entamoeba gingivalis* a process which he believes to be one of conjugation. He takes objection to the statement made by DOBELL (1919) that he did not describe the process and quotes his own words written in 1916. Though he may have observed the fusion of two amoebae and their ultimate separation after interchange of cytoplasmic substance and ingested bodies this is a very different thing from conjugation which cannot be regarded as having taken place unless a fusion of nuclei has occurred. As regards *P. falciparum* var. *quotidianum*, the author believes that this parasite is distinct from *P. falciparum* chiefly because it causes a quotidian fever, is definitely smaller in all its stages of development, and gives rise to fewer merozoites (p. 452 *et seq.*). The experiments on inoculated malaria in the treatment of general paralysis have shown that infection produced by a single mosquito bite may give rise in the case of *P. vivax* to quotidian fever, so that this feature loses some of its importance as a means of differentiating species. Whether the small size and smaller merozoite number indicate a distinct parasite or merely a small strain of *P. falciparum*, which in the reviewer's experience varies much in size in different infections, can only be decided by further and most difficult observation. The reviewer is of opinion that it is better to regard all the crescent producing parasites of man as belonging to the one species *P. falciparum*. Similarly, he thinks it better to regard *P. minutum* (*P. ovale*) as an aberrant form of *P. vivax* and *P. tenue* as an amoeboid form of *P. falciparum* rather than as distinct species (pp. 462–470). It should be pointed out that LAVERAN and MARULLAZ (1914) gave the name *Haemamoeba tenuis* to a small species of *Plasmodium* of birds and as *Haemamoeba* is a synonym of *Plasmodium* it is very doubtful if the name *Plasmodium tenue* can legitimately be employed for the human parasite even if it be a distinct species. As regards the bird parasite, the author on p. 390 states that it belongs to the genus *Proteosoma*. The majority of protozoologists, including the reviewer, believe that it has no characters to justify its inclusion in any other genus than *Plasmodium*. In the section devoted to the ciliates (p. 518) it is erroneously stated that these Protozoa reproduce by binary longitudinal division, though on p. 524 *Balantidium coli* is correctly described as dividing by transverse division.

On the genus *Craigia*, the author is most emphatic. The form *C. hominis*, first described by him from the Philippine Islands, is said to have an amoeboid phase which eventually encysts. Within the cyst numerous flagellates, each with a single flagellum, are produced. They escape from the cyst and become amoebae, which after growth repeat the encystment process. No one, apart from the author, has yet been able to discover in the human intestine an organism which has such a life cycle and the reviewer, who has fully discussed the question elsewhere, and many other observers deny that any such organism exists. The discovery by KOFOID of an amoeboid organism with a single very fine flagellum in human faeces does not support the author's contentions, for no life cycle like that attributed to members of the genus *Craigia* has been traced.

KOFOID'S organism probably belongs to the genus *Oikomonas* or one of its allies and does not resemble in any way the flagellate form of *C. hominis* depicted by the author, which has a thick tail rather than a flagellum. The reviewer has pointed out that it is his belief that the flagellate stage of *C. hominis* first described by the author from the Philippines and later recorded from Honduras by BARLOW is merely *Chilomastix mesnili*, for the author failed to recognize this species in the Philippines, while BARLOW did not record it from Honduras, in both of which places it is now known to be of frequent occurrence.

It is unfortunate that in the list of members of the genus *Plasmodium* occurring in animals (p. 389) *P. bovis* Kolle, 1898, is mentioned, for it is far from clear that KOLLE was dealing with a member of this genus, while the undoubted species *Plasmodium bubalis* which occurs in the buffalo in India in not noted.

A reviewer naturally turns to references to his own work. In this case he finds that the author has made very generous references to his publications, but in two instances these are inaccurate. On p. 170 it is stated that he described *Trichomonas* in the wall of the human small intestine instead of the large intestine, while on p. 128 it is stated that he mistook *Blastocystis* for the cysts of *Chilomastix mesnili.* A reference to the reviewer's paper of 1910, in which this flagellate was first described, will show that the cysts of *C. mesnili* were properly described and depicted and that the reference to *Blastocystis* concerns certain degenerate flagellates which resembled this organism.

Such are some of the points on which the reviewer finds himself in disagreement with the author in a book which is full of information and instructive detail The student of medical protozoology is fortunate in having available such a clear account of the Protozoa which produce disease in man.

C. M. Wenyon.

ENGEL-BEY (Fr.). [Prof. Dr. Geheimer Sanitätsrat.] Zur Therapie der Lepra. [**Treatment of Leprosy.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg. Path. u. Therap. Exot. Krankh.* 1926. Vol. 30. No. 2. 60 pp. 1926. Leipzig: Verlag von Johann Ambrosius Barth. [Price Rm. 3.]

Dr. Engel-Bey deals in this paper with the results obtained in recent years by the modern treatment of leprosy with the derivatives of chaulmoogra oil.

Up to the end of the last century the outlook for the leper was generally regarded as an almost hopeless one. It was known that cases sometimes occur in which the disease appears to exhaust itself and a spontaneous cure follows; but such cases are exceptional, and the causes of such a fortunate result are unknown.

In the absence of any specific treatment for the disease, recourse was had to numerous drugs and other substances, some of which had a considerable vogue for a time, nearly all of them have failed to justify the optimistic expectations that were sometimes entertained.

At all times chaulmoogra oil has enjoyed a good repute, especially in India. But the crude oil, when given by the mouth, is so unpleasant and so liable to cause digestive and other disturbances, and injections of it are so painful and so slowly absorbed, that patients can seldom be induced to continue the treatment for an adequate length of time. During the last twenty years or so many medical men and chemists, in several parts of the world, have carried out investigations into the composition of chaulmoogra oil, and have succeeded in isolating, in a more or less pure state, those constituents (chiefly unsaturated fatty acids) that have the greatest therapeutic and the least irritating effect. Dr. Engel-Bey gives here a very interesting though brief account of the chief work that has been done in this direction, and of the results that have been obtained by numerous physicians in charge of leper asylums Almost all have reported favourably —many, indeed, very enthusiastically—of the striking effects of the new chaulmoogra derivatives. He contrasts the attitude towards the curability of leprosy of those attending the Second Leprosy Congress in 1909 with that of the members of the Third Congress in 1923, and it is obvious that most of those who have had experience of the results of modern treatment feel justified in taking a much more sanguine view of the situation than was formerly possible The author makes no extravagant claims for this treatment, too little time has elapsed since it has been adopted on a large scale for a decided opinion about it It is certain that there are many cases that cannot be cured at present, though there are few in which the condition cannot be, at least, much ameliorated He emphasizes, as others have done, the fact that in leprosy (as in tuberculosis, syphilis and cancer) early diagnosis and treatment are of the first importance

The problem for the immediate future is how to educate the inhabitants of countries where leprosy is common, and bring home to the them the knowledge that leprosy can be cured if early recourse is had to treatment A favourable circumstance is that most people in those countries are quite familiar with the common early symptoms of leprosy Fortunately, also, the administration of the chaulmoogra-esters is practically painless, and this cannot fail to popularize modern treatment Dr Engel-Bey insists on the importance of carrying out the treatment in asylums or hospitals, where good food, good nursing, and a hygienic environment contribute so much to success He reminds us that ignorant people are always apt to imagine that they are cured as soon as they obtain some relief from urgent and obvious symptoms, unless they are happy and comfortable, they will not stay for the prolonged course of treatment that is necessary for a complete cure

Although, with the exception of some recent reports and statistics, there is nothing absolutely new in Dr Engel-Bey's paper, his lucid summary of the actual facts of the present state of the treatment of leprosy is of much practical value.

H J Walton

BLANTON (Wyndham B) [B A, M A, M D, Richmond, Virginia Associate in Medicine, Med College of Virginia] **A Manual of Normal Physical Signs.**—215 pp 1926 St. Louis: The C. V. Mosby Company [$2 50]

The preface of this book suggests that the text-books of Physical Diagnosis are so complicated by descriptions of pathological signs that the average beginner cannot disentangle the normal signs This "compilation of normal findings"—without illustrations!—claims to simplify the study of the normal and does not justify the claim The chapter on blood pressure is positively misleading: the systolic blood pressure is stated to be "a measure of the force of the heart beat," and it is surprising to find the unqualified statement that the blood pressure rises in the evening A new book is always welcome when it throws light on new work or new light on old work, but the subject material of the book under review is, and for years has been, better and more lucidly arranged in better books

R. J. C Thompson

BUREAU OF HYGIENE AND TROPICAL DISEASES.

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SPRUE

FAIRLEY (N Hamilton) & MACKIE (F P) assisted by CHITRE (G D), GOKHALE (S K), GORE (S N) MALANDKAR (M A), & SACASA (F J) **A Progress Report on Researches in Sprue (1924-1925). (From the Bombay Bacteriological Laboratory).**—*Indian Jl Med Res* 1926 July Vol 14 No 1 pp 105–123 [19 refs]

The authors investigated over a period of 18 months 150 strains of yeasts obtained from sprue cases and others The results on various media were compared with those given by strains of *Monilia* obtained from the Lister Institute They consider the classification of yeasts to be in a chaotic state and that considerable variation in their reactions occur according to age and the length of time since isolation

The results obtained with 137 strains of yeasts from 111 cases of sprue and other diseases when classified show that yeasts of the typical *Monilia ashfordi* type are found in about half the cases of sprue but are present in non sprue cases and in healthy persons to a similar extent The toxicity tests revealed no differences in this respect Repeated intraperitoneal injections in guineapigs give rise to plastic peritonitis and death while single massive doses by intra venous route are not usually followed by fatal results and virulence is not exalted by passage These results were obtained with strains of yeasts supplied by ASHFORD himself

A series of experiments to produce sprue in monkeys by feeding was frustrated by the discovery of a yeast of the *ashfordi* type in their faeces

Serological investigations revealed common group reactions in the complement fixation test for *M ashfordi* and *M albicans* so that they proved unsatisfactory

Evidence that any yeast plays a specific rôle in the etiology of sprue is definitely lacking

Investigations on the aerobic intestinal bacilli in sprue compared with the results obtained from controls (normal enteric, and dysenteric cases) showed that the aerobic bacillary flora of sprue stools resembled most closely that of dysentery, i e one half belong to the Colon-aërogenes group and one fourth each to the Salmonella and Typhoid-dysentery groups

As a result of combined clinical and pathological observations the authors regard sprue as due to some infective agency, involving the mucosa of the alimentary tract and leading to the generation of substances which deleteriously affect the blood elements

The inflammatory lesions observed in the intestine at autopsy are almost as variable as those in the buccal and lingual mucous membrane. In four autopsies they have observed gross intestinal ulceration once, and enteritis of the terminal portion of the ileum on another occasion. Attenuation of the walls of the small intestine was observed in three cases, but they were never able to prove that this represented atrophy in excess of the general wasting of other viscera.

Special attention has been paid to the intestinal lymphatic system; but without evidence of lymphatic obstruction. The bone marrow in an advanced case of sprue showed the typical picture of pernicious anaemia. Complete aplasia was present with gelatinous greenish-yellow marrow throughout the femur.

As regards the clinical aspects the authors are convinced that sprue is a distinct clinical entity and that it is much more widespread in its atypical forms than is generally recognized. Diagnosis, at least in Bombay, should not be postponed until the classical white, gaseous stools develop, for this represents but one stage. At certain periods the stools may be greenish or brown in colour. Hospital records go to show that patients are frequently admitted with diagnoses of debility and enteritis before some classical feature of sprue develops.

In one group of cases the anaemia dominates the clinical picture; difficulty may even be experienced in differentiating this condition from pernicious anaemia, but emaciation is always present, and the central nervous system is never involved.

Instances of multiple infection in the same family have been noted in certain bungalows and localities. The vast majority of cases were in Europeans or Anglo-Indians, but cases are met with in the Indian community. Long residence and preceding malaria or dysentery are predisposing causes, sprue rarely develops in a healthy person.

The majority of cases showed lowering of the ionic blood calcium, but a figure of less than 7·4 mgm. per 100 cc of serum was not recorded. They do not regard endocrine deficiency as playing a primary rôle in the aetiology of sprue

The fractional test meal in 26 cases of sprue showed hyperchlorhydria in 4, 7 were normal, 8 had hypochlorhydria, and in 7 hydrochloric acid was absent.

In pernicious anaemia, true achylia exists and is due to a secretory defect, while the achlorhydria of sprue is due to neutralization by alkaline secretion from the duodenum

In the great majority of cases anaemia develops, if the disease is advanced, poikilocytosis and anisocytosis are frequent, but nucleated red cells, especially megaloblasts, are rare. High Van den Bergh readings are the rule in pernicious anaemia, exceptional in sprue.

As regards the fat analysis of the faeces, in early cases the findings suggest a failure of pancreatic functions, since fat splitting is inadequate and saponification minimal, but it is much more probable that the motor activities of the entero-colon are entirely responsible. In the well established disease an average of 47·1 per cent. of total fat with a proportion of neutral fat to free fatty acid of 1 : 2·5 was obtained.

The blood contained 259·8 mgm. of fatty acid and 163 mgm. of cholesterol per 100 cc. with a total fat of 412·8 mgm. per cent., an average below the normal—480–670 mgm. per cent. The question naturally arises whether the increased fat content of sprue stools may not be partially dependent on excessive excretion of fat through the intestinal mucosa.

The blood sugar content of the blood was within normal limits. Estimation of the non-proteid nitrogen and chloride contents of the blood did not indicate renal inadequacy. The authors record their opinion that a reading of under 9·4 mgm. of ionic calcium per 100 cc. of serum is diagnostic of sprue, but consider that a course of parathyroid and calcium lactate, as advocated by SCOTT, fails to give results superior to those of adequate dietetic treatment.

P. H. Manson-Bahr.

NEWHAM (H. B.) & MORRIS (R. M.). With Conclusions by MANSON-BAHR (P. H.). **A Study of Sprue and Addisonian Anaemia.**—*Lancet.* 1926. Aug 7. pp. 269–274. With 3 text figs. [32 refs.]

The aim of this paper is to emphasize the differentiation of sprue from Addisonian anaemia. Three groups of sprue cases may be distinguished : (*a*) With marked gastro-intestinal and mouth symptoms but without noteworthy anaemia ; (*b*) with gastro-intestinal and mouth symptoms accompanied by definite anaemia ; (*c*) with recurrent attacks of mild gastro-intestinal or mouth symptoms and severe anaemia.

The sex incidence in Addisonian anaemia is given as 2 males : 1 female ; in sprue, out of a series of 90, 59 were males and 31 females. This ratio is not absolutely trustworthy as accommodation for female patients is somewhat limited.

Age incidence. Average at onset of sprue for males 42 , for females 40 years, extremes 20 and 68. These figures conform closely with those accepted in Addisonian anaemia.

Geographical distribution of sprue. India provided 46, South China 15, Malay and Ceylon 7 each, Burma and the Philippines 2 each, Brazil, Nicaragua, Palestine and West Indies, 1 each. The remainder were 7 seamen who had spent much time in the Far East. The length of residence varied from 19 months to 48 years. In 10 instances the disease did not develop until the return of the patient to England.

In 19 cases the onset was sudden , in 7 it occurred during the course of some other affection.

Of the outstanding symptoms of sprue, diarrhoea was present in all 45 cases showing anaemia , the number of daily stools varied from 1–12. Sore mouth and tongue were present in 38 cases. The glossitis of Addisonian anaemia is only specific when accompanied by a definite clinical picture of the disease. In sprue, the aphthae characteristically occur in crops ; in one case 41 vesicles were present at the same time ; in other cases with sore mouths, no definite vesicles were ever seen. The relation of the sore tongue to the diarrhoea is not easily made out ; in some cases the two symptoms alternated, in others they coincided.

Abdominal Flatulency (40 in 45) and *oesophageal* pain (16 cases) are present in sprue and absent in Addisonian anaemia. Alteration of temperament, common in sprue, was present in no less than 12 cases in this series. Tetany (unknown in Addisonian anaemia) occurred in 3 cases. Loss of weight, 2–4 stone in one year, was commonly recorded ; marked loss was noted in 43 out of 45. The skin is dry, discoloured and wrinkled, seldom showing tendency to lemon tinting ; pyrexia occurs in sprue as in other severe anaemias. The abdomen is prominent with a tympanitic note extending into the flanks, peristalsis may be visible. In 40 cases the liver dulness was definitely diminished.

Fractional test meals in five cases, yielded achlorhydria in two, hypochlorhydria in two and hyperchlorhydria in one.

Remissions were noted in 22 out of 45, the length varying from three months to ten years. As regards prognosis, seven cases died; the rest left hospital with regained weights, in one case 42 lbs. in 12 weeks' treatment.

The degree of anaemia may vary very considerably. The colour index in all cases, with the exception of two, gave a figure above 1; the highest being 1·44 Leucopenia is a common feature of sprue anaemia. The course of the anaemia is dependent on the response to treatment of the sprue. The improvement is as marked as it is rapid. In one case, on admission, the red blood count was 1,620,000, and haemoglobin 40·7 per cent Six weeks later, after dietetic treatment alone, it was 4,000,000 red cells and 80 per cent.

The Price-Jones' graphic method of measuring the red blood corpuscles was applied to the blood of ten cases; in only three of these, severe cases, was a curve approximating those seen in Addisonian anaemia obtained. The degree of variation in size of the red cells in the former disease is not spread over so wide a range.

Cholesterol content of the blood. In seven healthy men, the cholesterol content of the blood varied between 0·29 and 0·14 per cent., giving an average of 0·192 per cent.

In eleven cases of sprue there was a definite hypocholesteraemia, and it appears that, on this feature alone, no distinction can be made between it and Addisonian anaemia As regards blood grouping, the majority of sprue cases were of Group IV.

It is concluded that sprue and Addisonian anaemia, though having several features in common, are distinct clinical entities

Spruce is definitely a disease of the tropics, in some way connected with the exposure of susceptible individuals to conditions inseparable from life in a tropical climate, Central Africa excepted

The typical anaemia which accompanies the two diseases is almost identical, but this alone does not indicate a similar aetiology. Addisonian anaemia is generally a fatal disease · sprue by no means so. The toxin of Addisonian anaemia has a most definite selective action upon the peripheral nerves, an effect which is not found in sprue.

P. H. M-B.

REED (Alfred C.) & WYCKOFF (Harry A.). **The Common Picture of Sprue, Pernicious Anemia and Combined Degeneration.**—*Amer. Jl. Trop. Med.* 1926. May. Vol. 6. No. 3. pp. 221–237. [1 ref.]

The purpose of this paper is to show that a common clinical entity is embraced by the diseases commonly diagnosed as tropical sprue, pernicious anaemia and combined degeneration of the spinal cord. A study of published cases leads the authors to think that the three may be due to different manifestations of a common toxin and that this toxin attacks the three systems—the blood, the gastro-intestinal tract and the cord—in varying degrees. For example, typical sprue may show evidence of cord changes and pernicious features in the blood, while typical Addisonian anaemia shows evidence of sprue-like gastro-intestinal changes and of cord degeneration; and subacute combined degeneration of the cord is always associated with a progressive anaemia which tends to become pernicious in character, frequently with achylia and other gastro-intestinal lesions. It is suggested that the toxin is most likely a group or type toxin and that it originates from the intestinal canal. The evidence they cite in developing this thesis may best be set forth in the subjoined table :—

	Sprue.	Pernicious anaemia.	Combined degeneration.
Insidious onset	+++	+++	+++
Periodicity	+++	++	+ Improves as anaemia improves.
Stomatitis	+++	++	+
Achylia	++	+++	+
Gastro-intestinal atrophy	+++	++	+
Diarrhoea, nausea, vomiting	++	++	++
Anaemia :			
Secondary type ..	+++	+	+
Later pernicious ...	++	+++	+++
Fever	0	+	+
Fatal when well-established	++	+++	+++
Cord symptoms	+	++	+++
Complexion	Muddy or dark.	Lemon	Biscuit colour

Illustrative cases are cited.

P. H. M-B.

LAMBRIGHT (George L.). **Sprue in the Temperate Zone. With Report of Case.**—*Amer. Jl. Med. Sci.* 1926. Apr. Vol. 171. No. 4. (No. 649) pp. 515–517. [6 refs.]

Sprue is recognized occasionally in Ohio in persons who have resided in tropical regions. The cases so far reported have led to the general belief that it is never acquired in the temperate zone. The case recorded was that of a lady of 30 years in whom illness began insidiously at 16 years of age. On account of the appearance of pernicious anaemia, splenectomy was resorted to without permanent improvement. The differentiation from Addisonian anaemia was effected solely by the isolation of *Monilia psilosis* from the stools. Evidence of blood destruction was found in the presence of urobilin and bile in the urine.

[The evidence of indigenous sprue in Ohio on this one case seems questionable. There appears to be no reason for regarding it as other than an aberrant case of pernicious anaemia ; there were no mouth or tongue symptoms and no mention is made of the size or bulk of the faeces. The leucocyte count is high, whilst in sprue a moderate leucopenia usually accompanies the anaemia.]

P. H. M-B.

LEWIS (W. H.). **Observations in Regard to Sprue in a Section of the South.**—*Southern Med. Jl.* 1925. Nov. Vol. 18. No. 11. pp. 794–795. [7 refs.]

From the author's observation—based upon 18 cases—sprue occurs quite commonly in the southern United States and it is doubtless not

restricted by any degree of latitude. It is probably quite often **confused** with pellagra, with which it has several features in common. **The digestive disturbances peculiar to sprue can be greatly improved by the administration of bile salts**

P. H. M-B.

MIKÉLADZÉ (Ch.). La sprue en Géorgie. [**Sprue in Georgia.**]—*Bull. Soc Path. Exot.* 1926. Mar. 10. Vol. 19. No 3. pp. 201–206 [7 refs] also summarized in *Arch. f. Schiffs- u Trop. Hyg* 1926. Feb. 1. Vol. 30 No 2 p. 94.

Until recently sprue had not been known to occur in Georgia and Transcaucasia, but from September, 1923 to June, 1924, the author was able to report 5 typical cases He based his diagnosis on the tongue symptoms, the acidity of the saliva, the comparative achylia, the anaemia, leucopenia, etc. It is probable that sprue is a comparatively common disease in Georgia, but most practitioners are unfamiliar with its symptoms and hence do not readily recognize it

P H. M-B.

VAN DOOREN (Th P C.) Nabetrachting omtrent " Beschouwingen over Indische Spruw " [**Further Reflections in Connexion with " Ideas on Tropical Sprue ".**]—*Geneesk. Tijdschr. v Nederl.-Indië.* 1925 Vol. 65. No. 6 pp 751–755

In continuation of his previous article (see this *Bulletin*, Vol. 21, p. 706), the author records further observations he himself made on his own illness He developed a distinct aversion, with actual intolerance to certain kinds of food (fish, meat, sugar, etc) Fruit cures, at first strawberries, later replaced by cherries, prunes, pears, bananas, etc , brought only temporary relief As a regular diet in sprue, van Dooren recommends raw milk, fruit and vegetables, with restriction of carbohydrates and meat

He maintains [without producing sufficient argument] that tropical sprue is caused by (1) a congenital disposition ; (2) tropical life with the high demands it puts on metabolism , (3) monotony of the diet by frequent use of preserved foods and lack of raw and fresh fruit, vegetables, etc.

W. J. Bais.

BAUMGARTNER (E. A.) & THOMAS (W. S). **A Case of Tropical Sprue with Autopsy.**—*Clifton Med. Bull.* 1925. Oct. Vol 11. No. 3. pp. 90–93. [8 refs]

The patient, a lady of 51 years, contracted sprue in the Philippine Islands which, after a course of exceptional severity lasting over three years, proved fatal A severe degree of anaemia was present. Cultures of the stools on Sabouraud's medium yielded a growth of *Monilia psilosis* which gave the typical reactions At autopsy, marked emaciation of the body was noted The stomach contents contained no free hydrochloric acid The small intestines were dilated and filled with gas and the walls were slightly thinned, the lymph glands of the mesentery enlarged and congested. The blood calcium post-mortem was 5·2 mgm. per 100 cc. of blood. On dissection of the thyroid region only one parathyroid was discovered ; the bone marrow was of the aplastic type. These writers consider there is not sufficient evidence for regarding the attenuation of the bowel and the shrinkage of the liver as pathognomonic of sprue; it is not greater, they think, than should be expected in severely emaciated cases. The swollen mesenteric lymph glands they attribute to the presence of Monilia. They agree with FALCONER and ROWE (see this *Bulletin*, Vol. 8, p. 148) that there is no characteristic pathological lesion to account for the severe symptoms found in tropical sprue.

P. H. M-B.

NEWHAM (H. B.). **Notes on the Analysis of Sprue Stools.**—*Jl. Trop. Med. & Hyg.* 1926. June 15. Vol. 29 No. 12 pp. 169-170. [3 refs.]

The results recorded were derived from a study of 11 cases of sprue. With a view to ascertain whether analyses conducted at definite intervals on typical cases of sprue would afford any evidence as to the general condition of the patient, weekly analyses were conducted on a series of 6 cases over a period of 5 weeks In all cases Cammidge's method of analysis was followed. With progressive improvement in the patient's condition the only figures which reflect this improvement, as judged by the fat analysis of the faeces, are those of the total fat, which fell in this one case from 56 to 44 per cent. There appears to be a slow and very gradual improvement in the fat content, but by no means to the extent of the almost dramatic improvement in the patient's condition. In one instance in which an analysis was made eight months after all symptoms had disappeared and while the patient was subsisting on a mixed diet, the figures for total fat were still above the normal The proportions of soaps, neutral fat and fatty acids vary very largely from week to week, even on a constant dietary; the figures for neutral fat in such an instance may range from 7·82 to 1·78 per cent. The biliary functions of the liver are deranged in sprue, and some light was thrown on this subject by an investigation upon the cholesterol output in the faeces. The cholesterol introduced into the bowel with the bile is excreted in the faeces as stercorin, but in no cases of sprue did the output of the substance approach the normal The output of stercorin varied from 0·147 to 0·328 gm. in the twenty-four hours.

P H. M-B.

ASHFORD (Bailey K.) & HERNÁNDEZ (Luis G.). **Blood-Serum Calcium in Sprue and other Pathologic States in the Tropics.**—*Amer. Jl. Med. Sci.* 1926 Apr. Vol 171. No 4. (No 649). pp. 575-591. [29 refs.]

The calcium content in the blood serum of normal persons in Porto Rico was determined from blood samples of 96 healthy soldiers. Taking 9-12 mgm. per 100 cc. as the normal limits of total serum calcium and from 4·5-6 mgm. for diffusible calcium, then 17·7 per cent. of these healthy soldiers fell below the normal and, as regards diffusible serum calcium, 38·52 per cent. It therefore seems justifiable to consider that the serum calcium in healthy persons in Porto Rico is somewhat low. In a study of the serum calcium of 101 persons suffering from "the syndrome of nutritional unbalance for the island," which is described, 45·64 per cent. fell below the minimum for the total and 66 33 per cent for the diffusible serum calcium, in sprue, on the other hand, 47 25 per cent are below the minimum for the total and 72 71 per cent for the diffusible calcium, respectively. In 47 cases of sundry diseases without any clinical evidence of sprue these percentages are respectively 44 66 and 62 74 On the whole the sprue cases show the lowest serum calcium values, although there is not sufficient difference between the three pathological classes to warrant the statement that sprue can be distinguished from the others by such insignificant calcium deficiency Over one-half of the severe and cachectic cases, in which the disease was so apparent as to exclude any other diagnosis, gave normal total calcium values, while one-fourth gave a normal diffusible calcium All doubt on the unreliability of total or diffusible calcium values is removed by the study of a table based upon calcium estimations of 456 inmates of the insane asylum, 55 48 per cent of whom were below normal in total and 79 36 in diffusible calcium

In order to clear up this point and the question of the efficacy of parathyroid gland extract in the treatment of sprue, two batches of injectable parathyroid were procured To one set of 24 cases one lot and to the other 26 the other lot was administered From tables constructed from the results there appears to be a real rise in serum calcium after intramuscular injection but it appears to be temporary only On the other hand long standing cases of sprue have attained a normal calcium serum content with diet alone, or monilia vaccine, but always in conjunction with improved nutrition improved digestion and the restoration of glandular efficiency Possibly then the persistent use of parathyroid is one of the many means of improving the condition of the patient but it is by no means to be compared with the efficacy of diet Muscular cramps in sprue are, in fact, tetany, and these symptoms disappear after injection of parathyroid extract Calcium lactate administered by the mouth cannot be depended upon to raise the calcium content of the serum but its use is sanctioned by the favourable clinical results obtained, the improvement may be gradual and only result from long and regular administration No further advantage was obtained by giving parathyroid gland *per os* A comparison in table form of a series of cases which received no parathyroid or calcium compared with a similar series on this form of medication failed to demonstrate any appreciable difference in the calcium serum content The method of estimating calcium in blood serum was by Tisdall s modification of Kramer and Tisdall's method

P H M B

SHELTON (C F) **Treatment of Sprue with Calcium Lactate and Parathyroid Extract.** [Memoranda]—*Brit Med Jl* 1925 Nov 7 p 844

The patient, who apparently had contracted the infection in India, developed symptoms of sprue in East Africa The usual diarrhoea and emaciation were present the loss of body weight being 16 lbs Within six weeks he was discharged from hospital having been carefully dieted and dosed with calcium lactate and parathyroid, with the result that rapid amelioration took place Within four months he was able to return to work at Mombasa

P H M-B

VAN STEENIS (P B). Onderzoekingen met de duodenaalsonde bij lijders aan tropische Spruw [**The Duodenal Tube in Tropical Sprue.**]—*Geneesk. Tijdschr. v Nederl-Indie* 1926 Vol. 66 No. 1 pp 117–138

The clinical history of three patients is quoted in every detail. Special attention was paid to the secretions of liver and pancreas, samples of the contents of the duodenum being taken by means of the duodenal tube The constituents of the bile in all cases were found to be below the normal, the decrease of bile acid salts was most marked In accordance herewith the excretion of urobilin in faeces and urine was very low in two cases, in the third case (studied during recovery) the urobilin excretion was normal, though low. The secretion of the pancreas (lipase, amylase, trypsin) appeared to be normal In two cases the colon bacillus was found in the duodenum, in the third a streptococcus

The lowered secretion of bile in tropical sprue may be the cause of the prevalence of anaerobic bacilli in the intestine and subsequently of the intestinal fermentation, meteorism, etc

The fat of the faeces consisted for a great part of fatty acids, thus the fat appeared to be sufficiently predigested (pancreatic ferments) but the absorption was hindered by the absence of bile

W J. Bais.

SCHROLI (G) "**Pseudo-Sprue.**"—*Ugeskrift f Laeger* 1926 Mar. 18 Vol 88 No 11 pp 276–277

This article was prompted by a report of four cases of a sprue-like disease occurring in Denmark published in the same journal last year by Hess THAYSEN (*ante*, p 46) This author inclined to the view that "sprue" was only a symptom-complex which may be found in different diseases "Sprue" is characterized by the chronic intermittent afebrile fatty diarrhoea, the typical stomatitis and the blood picture which not uncommonly—some say "as a rule"—resembles that of pernicious anaemia The description of the tongue in sprue tallies with that given by various authors in pernicious anaemia It is well recognized that chronic intermittent diarrhoea often occurs in pernicious anaemia If, now, fatty diarrhoea supervenes in the last-named disease, perhaps arising from the consumption of so much fat (cream, yolk of egg) that the intestine and pancreas, weakened by the grave anaemia, are unable to digest and absorb it, we shall have a clinical picture exhibiting all the characteristics of sprue That something like this actually occurs is shown by two cases that are fully recorded

E E Atkin

RODRIGUEZ ARJONA (Vicente) El Spruo o Diarrea cronica de Cochinchina en la Península de Yucatán [**Sprue or "Chronic Diarrhoea of Cochinchina" in the Yucatan Peninsula.**]—*Rev Yucateca de Dermat y Parasit* 1926 Feb 15 Vol 1 No 4 pp 118–126. With 1 text fig.

This is a general and superficial account of sprue, ignoring all recent work on the subject No new points are adduced and old mistakes are perpetuated For example (1) That the condition nearly always follows disease of the alimentary tract, such as dysentery or intestinal parasitic infection, (2) that *Monilia albicans* in tropical countries acquires virulence and produces sprue, (3) that if a case remains undiagnosed for 6–10 months no treatment is of any avail

H Harold Scott.

MALARIA.

i. JAMES (S. P.). **Epidemiological Results of a Laboratory Study of Malaria in England.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. Vol. 20. No. 3. pp. 143–157. [3 refs.]

ii. LEAGUE OF NATIONS. Health Organisation. **Malaria Commission. Report on the First Results of Laboratory Work on Malaria in England.** [JAMES (S. P.) assisted by SHUTE (P. G.)]—30 pp. C.H. Malaria 57 (1). 1926. Geneva.

iii. LE PRINCE (J. A.). **Destroying Engorged Anopheles as a Malaria Control Measure.**—*Public Health Rep.* 1926. June 18. Vol. 41. No 25. pp. 1220–1226. [7 refs.]

i. & ii. These papers are likely to be of such importance and are so full of valuable observations that no excuse is offered for this long abstract.

An exhibited stereophotomicrograph of the spirochaetes of syphilis in the aorta of a patient suffering from general paralysis showed how indefensible might be the injection of such blood into other patients. Accordingly in England the official arrangement is that malarial infection, used in the treatment of this disease, shall be carried through mosquitoes. The infective agent was *Anopheles maculipennis*, the malaria parasite *Plasmodium vivax* of two strains, one from India, one from Madagascar About 3,200 female *A. maculipennis* were collected in the adult stage from a country district where there was no malaria and used in 22 batches. Having been fed on one or more gametocyte carriers they were incubated at 22° to 24° C. in a saturated atmosphere till infective and then kept till required in an ice chest at temperatures of 4° to 6° C.

The following facts have emerged. Under these presumably favourable and sheltered conditions of incubation, the anopheline mortality is about 50 per cent. per week, so that, of 3,200, only 715 survived to infectivity. Only a small proportion of persons suffering from malaria are infective to mosquitoes. Gametocytes have never been found in thin films before the 7th day after the first rise in temperature, and about 3 days more elapse before they will infect mosquitoes. Their number rises rapidly, usually reaching a maximum about the second week of illness. More importance is, however, laid upon their "quality" than their quantity, since there have been many failures when their numbers have been in excess of the often-quoted figure of 12 per cmm. of blood. Their numbers vary extraordinarily, increasing for example in one case from 7 to 700 per 500 leucocytes ; and females have outnumbered males The infection of *A. maculipennis* after one feed upon an infective case is quite uncertain, and unless the quality of gametocytes is such that their host is an "exceptionally good infector of anopheles" several feeds are necessary to secure a 100 per cent. infection of a batch. This seems to be due in part to the influence of the mosquito's food, certain parts of the blood of certain animals and birds rendering the stomach unsuitable for oocyst formation. Again, oocysts may form and die, the sporozoit stage never being reached, so that the finding of oocysts is no evidence that a mosquito, [and presumably a mosquito species] may become infective. Further, in mosquitoes carrying nearly ripe eggs, the swollen ovaries prevent blood from entering the midgut and the mosquito from becoming infective, although in this case the oesophageal diverticula may be ballooned and give a false impression of probable infectivity. Similarly, individual greediness is a potent factor in determining the quantity of blood imbibed, though when gluttony pushes this to the extent of immediate evacuation it will operate against the likehood of infectivity. " The difficulties which have had to be overcome in order to obtain supplies of mosquitoes with 100 per cent. sporozoite infection of the glands have helped us to realize how many special conditions must be fulfilled in nature for the effective transmission of malaria from man to mosquitoes."

Infectivity having been acquired may be very persistent, surviving, for example, during three weeks at temperatures between 4° and 5·5° C. and during six days when it is below 0°C. ; mosquitoes have remained infective from 29 to 92 days, so that taken with the findings of SWELLENGREBEL (this *Bulletin*, Vol. 22, p. 397), WENYON (Vol. 19, p. 277) and SELLA (Vol. 17, p. 147) " we do not doubt that *P. vivax* can be carried through even a severe winter in hibernating mosquitoes, and that the carriage may be in either the oocyst stage or the sporozoite stage of the parasite or both "

Experiments showed that persistence of infectivity, when numerous opportunities of feeding were given, depended largely on continued reinfections. In passing on infection to man, 52 of 221 persons failed to develop malaria within the usual incubation period, and 50 of these failures occurred between November and March. Yet during these winter months patients kept in bed in a warm room during the incubation period developed malaria, while others working in the fields did not These failures to infect could not be explained on technical grounds, and so are referable to biological differences Three types of susceptibility to infection are illustrated by cases.

A case of normal susceptibility : bitten in July by 35 and by 8 infected mosquitoes, developing quotidian and tertian rigors, treated by 2 gm [30 gr of quinine daily for 5 days, reinfected by 120 mosquitoes a month later, developing 10 tertian rigors and, after repetition of the treatment, remaining free from malaria (8 months) A case of supersensibility: bitten in August by 60 infected mosquitoes, showing 12 severe quotidian rigors, treated as above, relapsing six times, each relapse being treated in the same way A case of refractory type : bitten in December, February and April by 7, 9, 14 and 7 infected insects, showing 5 quotidian rigors, these disappearing without treatment, and the patient remaining well to date (3 months) without any quinine

Applying this experience to war cases, it is held that of the many thousands of malarial infections a certain number were of the supersensitive type and that these furnished the relapses seen in England. It is considered, then, that in a malarious place a few only of the vast numbers of anopheles become transmitters of malaria, and they do so because they happen to pass their life in an environment and manner very different to the others. After their first feed they become overloaded with blood and will fly but a few feet to some sheltered nook, whence they emerge nightly to feed and in time to infect or reinfect the household. The house, then, is the place where they must be sought and destroyed.

In discussion Colonel Clayton LANE referred to the analogous condition noted by Dr. MANSON-BAHR as being produced in *Stegomyia* *pseudoscutellaris* by *F. bancrofti* in Fiji where a heavy infection sickened and killed the mosquito, so that a heavily infected human case was a smaller risk to the community than a light one, and asked whether there was any evidence that malarial infection killed more mosquitoes than died when fed on non-malarial blood. He noted that no Italian "bonification" was held complete without satisfactory housing. Dr. HANSCHELL urged the use of the household mosquito trap which he had found effective for mosquitoes in Barbadoes, where, however, anopheles did not occur, and of the household larval trap which the late Dr. COGHILL instituted and used most effectively in Lagos in 1913. This consists of a tray containing weak copper sulphate solution, in which mosquitoes oviposit but in which larvae die for lack of food. Colonel GILL held that the supersensitive case was the rule in India, and noted his failure to find any method of estimating the dose of sporozoits owing to the varying individual infectivity of any infected batch. In his experience, measured by their longevity, there was no disability to mosquitoes in India with malarial infection, and he questioned whether the house played an important part in infection in the tropics. Dr. STANNUS, without encouraging this means of protection, knew a number of men who drank two bottles of whisky a day and had had no malaria over a period of many years. Sir Almroth WRIGHT detailed the many fallacies which are inherent in such statistics as those dealing with the effect of malaria upon general paralysis and offered help in the physiological problems concerned. Dr. RUDOLF, referring to refractoriness to infection and the finding of Dr. MARSH that blood sugar decreased during malarial fever, suggested that it might be a matter of glucose content of blood. He emphasized that one who contrasted the discharges from Claybury Hospital of paralytics treated by malaria with conditions before this treatment could not question its effect. Dr. BALFOUR pointed out that all these paralytics must have had arsenicals, and that too little attention seemed to have been paid to that point in considering the striking effect of quinine on the malaria of these cases. The pH content of the mosquito's stomach might be a matter of importance. In reply Colonel James stressed the reasons which had led the Malaria Commission of the League of Nations to advise that in the European countries which they visited it would be best to deal with endemic malaria by measures limited to affected individuals and to the interiors of the houses in which they lived.

iii. Le Prince dealing with the house habits of anopheles in the Panama Canal Zone, writes: "After many species of *Anopheles* become engorged they rest . . . . relatively close to where they obtained their blood meal," and "are relatively easy to destroy." If destroyed at a definite hour each morning, malaria transmission will practically be prevented in that house.

"In 1908 a temporary labourers' camp, consisting of tents, was established near the site of the present Miraflores Locks and used for four and a half months during the rainy season, when malaria transmission is most frequent This camp was completely surrounded by extensive untreated *Anopheles* breeding places. A labourer with a fly swatter and catching tube was employed to destroy all the *Anopheles* he could find in the tents Each tent was examined soon after the labourers left each morning The malaria incidence among the labourers in these tents was thus kept down to 4 per cent. per month, or the normal rate at that time for the Canal Zone labourers sleeping in screened buildings at camps where mosquito-control work was being done."

Clayton Lane.

Labernadie (V. G. F.). Quelques remarques sur le paludisme en Guyane. [**Remarks on Malaria in French Guiana.**]—*Bull. Soc. Path. Exot.* 1926. Mar. 10 & Apr. 14. Vol. 19. Nos. 3 & 4. pp. 213–222; 280–287. With 1 folding chart. [11 refs.]

Is it surprising that Labernadie writes with bitterness of permanent "temporary" dwellings where passing miners are herded with their families in filthy rooms; of penitentiary camps and depots, so placed that culicines swarm and neither gauze nor mosquito nets are permitted on the ground that they interfere with the discipline of repression; and where an infection of 30 per cent of corpuscles seem to give the swarms of culicines an opportunity for mechanical carriage? In the forested hinterland, where malaria was said to be absent, he found children, born and bred there, to have enlarged spleens and some of the adults examined to be infected. In heavily infected and debilitated persons unusual forms of parasite have been found, such as *tenue* shapes and in one case two unequal caryosomes at opposite ends of a horizontal oval with linear projections recalling the astronomical sign for Neptune. Malaria and helminthiasis are held to have no reciprocal action.

P. vivax has been found more resistant to quinine than *P. falciparum*. Sulphate of soda 10 gm. (ʒijss) each morning has been a beneficial adjuvant, as were arsenic (arrhénal) and 0·03 to 0·08 gm. of iodine as "iodo-iodurée." Stovarsol and tréparsol are also advised with quinine, which, in tablets, has given satisfaction and has shown absorption by being detected in the urine. Regarding prophylaxis the writer asks what can be done without men or money.

C. L.

Davis (Nelson C.) & Boyd (Mark F.) **The Occurrence of Quartan Malaria in the Low Coastal Regions of the State of Rio de Janeiro, Brazil. An Epidemiological Study.**—*Amer. Jl. Trop. Med.* 1926. May. Vol. 6. No. 3. pp. 195–203. With 1 text fig. [4 refs.]

In over 1,700 positive malarial blood examinations recorded in four villages over 6 months, 20 cases of quartan malaria were found. Their distribution was, in certain instances at least, focal, with fresh cases appearing each year. It is believed that this species is probably more common than is supposed, since microscopists, by its rarity, become biased in favour of other species, the rings if few are difficult to determine, and in mixed infections the common *vivax* forms will tend to the overlooking of the others. No obvious reason for the failure of quartan malaria to effect an epidemic increase was discovered.

C. L.

Mazza (Salvador) & González (Conrado). Informe epidemiológico palúdico de la margen izquierda del rio Chico en la ciudad de Jujuy. [**Malarial Notes of the City of Jujuy, Argentina.**]—*Bol. Inst. Clin. Quirúrg.* Buenos Aires. 1926. Apr. No. 11. 7 pp. With 5 figs.

During February 503 thick drop examinations disclosed 37 per cent. of positives. Of the positives, 26 per cent. showed gametocytes or a gametocyte index of nearly 10 per cent. Of plasmodial carriers 73·5 per cent. harboured *P. falciparum*, 18·3 per cent. *P. vivax*, 1·8 per cent. *P. malariae*, and 6·4 per cent. mixed forms. The sporozoit rate of 28 female anopheles, believed to be *A. pseudopunctipennis*, was 7·14 Children numbered 207 with a spleen rate of 62·8

C L.

MACDONALD (G) **Malaria in the Children of Freetown, Sierra Leone.** —*Ann Trop. Med & Parasit* 1926 Aug 13 Vol 20 No 3 pp 239–262 With 2 text figs & 1 map [9 refs]

The writer has worked in conjunction with the Lady Medical Officer, Dr M G BLACKLOCK Splenic enlargement is measured by CHRISTOPHERS' standard abdominal chart (this *Bulletin*, Vol 21, p 598) modified in so far as the African child's relative measurements have been found to differ from those of the Indian For example, with a sitting height of 60 cm the malarial spleen passes under the costal margin at 13 cm from the umbilicus in the African as compared with 14 in the Indian In addition, when not dealing, as CHRISTOPHERS was, with a hyperendemic area it is suggested that a just palpable spleen should be taken as having its apex 15 cm from the umbilicus A table is added by means of which—knowing the sitting height, the internipple line or the nipple-umbilical line—the measurements obtained by Christophers' methods can be reduced without calculation to that of the Standard Child and charted on the Standard Chart Another table shows that in 445 African children the splenic apex was, on the average, charted within 0 2 cm of the same spot whichever of the three lines was taken as the basis of measurement so that that line may be used which is most readily measured under local conditions

The area dealt with contains an endemic portion (spleen rate 50) and a hyperendemic portion (spleen rate 72) In the endemic area the parasite and spleen rates varied little from 3–12 years of age In the hyperendemic area the parasite rate fell at 11 years, whereas the spleen rate was least from 7 to 10 years and rose again at 11 The numbers concerned were considerable The highest parasite rates were in those whose splenic apices lay between 6 and 21 cm from the umbilicus The parasite rate was determined by examination of a single thin ear film, Giemsa stained and examined for at least 10 minutes Of 1,059 examined 51 per cent showed parasites

	Endemic area	Hyperendemic area
Children examined	722	337
Percentage infected	41	72
Percentage of parasites among the infected		
Subtertian	83	78
Quartan	14	19
Tertian	2	2
Percentage of pigmented leucocytes only	1	1

Of 49 boys examined 7 times, or less if malaria parasites were discovered earlier, 98 per cent showed definite evidence of illness and 86 per cent parasites, although 47 per cent only had shown parasites at the first examination

In 1,007 of these children the temperature was taken and was constantly raised, but without relationship to parasite or spleen rates The hyperendemic area was in close proximity to the breeding places of *A costalis*

C L.

ESSED (W. F. R.). **Preliminary Report of Malaria on the Poelau Toedjoeh.**—*Meded. Dienst. d. Volksgezondheid in Nederl.-Indië.* 1925. Pt. 3. pp. 292–300. With 1 fig.

A survey of these scattered islands lying eastward of Borneo and close to the equator shows that they fall into two malarial groups, those with hills rising from a narrow coastal strip exhibiting WATSON's "malaria of the coastal hills" with *A. maculatus* as the carrier, and those with a wide coastal area, swampy and densely covered with vegetation, with *A. umbrosus* as carrier. The malaria problem is accordingly of special interest rendering further investigations desirable.

C. L.

ESSED (W. F. R.). **Malaria at Tandjong Pinang [Sumatra].**—*Meded. Dienst. d. Volksgezondheid in Nederl.-Indië.* 1925. Pt. 3. pp. 301–317. With 11 figs.

A report of a detailed local malarial survey. The splenic index varies in different parts from 5·1 to 73·1 per cent. in over 500 examinations, and the parasite index in 545 films varied in children from 13·4 to 42. The anopheles bred from larvae were *A. maculatus* 453, *A. kochi* 127, *A. sinensis separatus* 77, *A. karwari* 19 and *A. umbrosus* 2. The first were, as usual, found almost exclusively in exposed, clear, running water. There were 3 exceptions: a hole in swampy ground with dirty water (with *sinensis separatus*), a mud puddle with the same and with *kochi*, and in what is called a well, but is probably a spring, with the same two species and with *karwari* also. The anopheles density was low, but it is suggested that there may occur *maculatus* waves as reported by WATSON in Malaya and SCHUFFNER on the Karo plateau.

A swamp seemingly propitious for *A. umbrosus* contained no larvae, although they were present in a puddle a few metres away, an example of the seeming freakishness of anopheline breeding in our present state of knowledge. It is concluded from the nature of catches in and out of doors that *A. maculatus* feeds exclusively at night and then immediately leaves the house, and that this mosquito is the local host—from analogy with the topography of Malaya—because splenic and parasite indexes are highest near its breeding places, because it is the prevalent mosquito with the most extensive breeding grounds, because it attacks man at night, and because it has been found locally infected. The danger of exposing the water table in any excavations in this *maculatus* country is emphasized.

C. L.

KLIGLER (I. J.). **The Epidemiology of Malaria in Palestine. A Contribution to the Epidemiology of Malaria.**—*Amer. Jl. Hyg.* 1926. May. Vol. 6. No. 3. pp. 431–449. With 3 charts in text. [6 refs.]

Regarding conditions favouring anopheline breeding, it is concluded that the mosquito and malaria prevalence for the season can be predicted with considerable accuracy from the character of the winter rains. The position is then parallel to that which, as readers of this *Bulletin* are aware, GILL has for several years maintained to hold for the S.W. monsoon and the Punjab. Arab and Bedouin carriers are difficult problems. A steady influx of susceptibles, a quarter of them by birth, provides the third essential for epidemic conditions. Seasonal prevalence has three peaks, March–April almost exclusively tertian, June–July predominantly tertian, October–November predominantly subtertian. The chart in the text does not show this, but, being arranged in percentages of primary and secondary malaria, could not. Regarding this last distinction it is held that new infections cannot be the cause of the first peak, because the first spring brood of mosquitoes does not appear till at least the end of March, and could not cause it, so that they must be relapses. [It will be noted that the possibility of winter house infection is not mooted.] Regarding the three anopheles possibly implicated, *A. elutus*, *A. sergenti* and *A. superpictus*, dissection of 1,500 of the first and 400 of the second has shown 12 and 1 infections respectively.

In explanation of the seasonal prevalence of malaria Kligler considers WENYON'S hypothesis (Vol. 19, p. 277), that there are more carriers of tertian malaria in the spring and that this preponderance ceases through quinine administration which sterilizes the gametes of tertian but not those of subtertian malaria. He points out that Arab and Bedouin show these features but their consumption of quinine is negligible. He concludes from the literature that the effect of temperature on the exogenous cycle merits more investigation.

C. L.

MAIRE (G. I. L.) & SABBAGH (A.). Le paludisme dans la région de Damas. [**Malaria in the Damascus District.**]—*Arch. Méd. et Pharm. Milit.* 1926. Mar. Vol. 84. No. 3. pp. 253–291. With 3 charts & 3 maps. [17 refs.]

The irrigating rivers give to the Damascus oasis its life and beauty. Irrigation is intermittent for the demand is such that any portion of land receives water only once or twice a week, and absorbs it with avidity. there were, till recently, pestilent marshes produced by percolation but these have been drained and turned into pleasure grounds. There are still stagnant collections deliberately induced to obtain a head for the production of electric current or for the steeping of hemp and by the lake of Ateibe some 30 kilometres distant with its huge adjacent marshes, malaria is rampant. The temperature from May to November is favourable for development in *A. maculipennis*, the only species hitherto found. *P. malariae* was not noted about Damascus, the percentages of *P. falciparum* and *P. vivax* being respectively 6.78 and 93.21. The malarial season is from June to November. Manifestations have the usual characters. Not less than 2 gm. daily of quinine is held necessary, given for *P. vivax* during 4 weeks and for *P. falciparum* during 6 weeks, none being given on one day of each week. Intravenous medication is reserved for pernicious attacks, intramuscular is rarely used, oral administration is the rule, supplemented as desired by injections of cacodylate of soda and colloidal iron. For individual protection a large, as contrasted with a small, mosquito net is advocated, and screening of houses where reasonably possible. Regarding preventive quinine the writer, evidently with deliberation, writes cryptically that its administration is a dogma which at the present time can no longer be discussed, but that even if the dogma be sacrosanct the dose should vary from 0.25 to 0.4 gm. [4 to 6 gr.]. Antimosquito measures are sketched on general lines.

C. L.

MALARIACOMMISSIE VOOR NOORDHOLLAND. Jaarverslag der Wetenschappelijke Malaria-Commissie voor Noord-Holland over 1925. **[Report of Malaria Commission for Noord-Holland.]** [ALDERSHOFF (H.), Chairman. KORTEWEG (P. C.) Secretary.]—33 pp. [32 refs.] 1926.

Another of these valuable reports [see this *Bulletin*, Vol. 22, p. 818]. Anopheles containing blood were found throughout the year in stables while in houses December was the only month in which none such were collected. There is then no true hibernation in Holland. In 1925 the first males, indicating the hatching of the new brood, were found on 4th June. From 311 of 2,097 stables examined in Amsterdam, some 4,600,000 anopheles were recovered, and 2,157 from 196 dwellings in which cases of malaria had appeared. The distribution of malaria is considered and note is made of a pamphlet on The Dutch Quinine Trust *versus* Smalarina, and considerable attention paid to a paper on this subject by DRIESSEN. [If any are disposed to think that Dutch bias exists on this point perusal of reports by LOW and GREGG, this *Bulletin* Vol. 22, p. 819, and SULDEY (*infra*) is recommended.] The Commission has undertaken investigations on the value of mercury in malaria and has found it useless. Certain measures for destroying anopheles were investigated. A B I S consists of petroleum with 6 to 10 per cent. carbon tetrachloride to cover the smell; A R D I of petroleum with 10 to 15 per cent. of carbon tetrachloride, 1.8 to 2 per cent. of methyl salicylate and some resin. The varying composition, the strong petroleum smell of the first and the stickiness of the second, are drawbacks. Flyosan and R I D S worked well and appear more acceptable to farmers than lysol. VAN THIEL has examined hundreds of *Anopheles maculipennis* and has found that in wing length and number of maxillary teeth there are local races. The highest chlorine content of water in which anopheles larvae were found was 2 gm. per litre with a specific gravity of 1.0048. A malaria film is being shown. A list of publications dealing with malaria in Holland during 1925 is added.

C. L.

PUBLIC HEALTH BULLETIN. Washington. No. 156. 1925. Aug. pp. v+142. With 1 text fig. & 8 figs. on 4 plates. **Transactions of the Fifth Conference of Malaria Field Workers, held at New Orleans, Louisiana, November 25 and 26, 1924.**

The note on which Surgeon General A. M. STIMSON opened this congress of nearly 100 members was the determining rôle which economic conditions play in malaria. BARBER KOMP and HAYNE instanced plentiful anopheles with little malaria in a sugar plantation county where malaria had decreased as "pioneer conditions of living" have been discontinued. DEEKS styled poverty, ignorance, and poor living conditions as the handmaids of malaria and hookworm disease. KLIGLER, speaking of Palestine, described malaria houses and the preference of anopheles not for animals but for their houses if of a certain type. WILLIAMS, dealing with America, was not much interested in the heaviness of breeding, but deeply so in the "bedroom rate" of *A. quadrimaculatus*. I. F. PRINCE showed that 100 per cent. of families of coloured farm tenants when they understood the need and value of screening, could be interested in the screens. SHAW'S aphorism was,

“ malaria perpetuates ignorance and ignorance perpetuates malaria ” MAYNE and DARLING showed that a preponderance of male anopheles indicated proximity to breeding places.

C L

MARCHOUX (E) Unicite ou pluralite des hématozoaires du paludisme [**Malarial Parasites: One or Many.**]—*Semana Med.* 1926 May 20 Vol 33 No 20 (1688) pp 1091–1094

The case for unicity is put thus Polymorphic parasites vary with their surroundings, variations succeeding one another in certain countries when there is modification of the body medium Thus in Senegal, the natives harbour large forms and Europeans the small pigmented forms, but the European returning to Europe relapses as large forms Such a substitution of large for small forms, in examinations separated by 1 or 2 days, has been observed Again, it is held that parasites producing the same type of fever vary definitely with the locality, as, for instance, in the specimens of *P vivax* coming from the Amazons, Cape Verde Island or Indo-China while there have also been described such forms as *P vivax minutum*, *P tenue* and *P caucasicum*, so that the 3 species of the pluralists do not hold [These appearances were of course seen in dried films]

The case against unicity is put thus Most malariologists hold to 3 species, *P vivax*, *P malariae* and *P falciparum* which differ morphologically not only in the human but in the mosquito cycle, as, for example, in pigment, refractivity and in size of sporozoites, and in the period taken for development The Senegal findings simply imply that the environmental conditions favour the growth of one species rather than the others The large numbers of injections now made show [in an infection established as microscopically pure] always the same form and as JAMES maintains the same form may hold in strains with varying characters The culture of parasites has not been sufficiently successful to test unicity or plurality The different forms produce different lesions, such as the capillary collections of *P falciparum* and the effects on splenomegaly of *P vivax* The action of quinine and stovarsol on the several parasites differs Marchoux ranges himself with the pluralists

C L

MARCHIAFAVA (Ettore) Discorso inaugurale del I Congresso Internazionale sulla malaria (Roma 3–6 ottobre 1925) [**Inaugural Discourse at the First International Malaria Congress, Rome.**]—*Riv di Malariologia* 1926 Mar–Apr Vol 5 No 2 pp. 182–190 [English summary p 252]

The English abstract describes this as a historical reconstruction of our knowledge on malaria ” and mentions the names of VARRONE who suspected minute organisms in swamps, LANCISI, who believed mosquitoes to be harmful through their saliva, TORTI, who described malaria in relation to the action of quinine, BASSI, who believed that undiscovered parasites renewed the fever by their reproduction, and BIGNAMI who, by “ a work of subtle criticism foresees that the transmission must take place through the body of the mosquito ” In the Italian original there are mentioned many other Italians, and three non-Italians, PASTEUR, MANSON and ROSS

C L

DARLING (Samuel T) **Splenic Enlargement as a Measure of Malaria.**—*Ann Clin Med* 1926 Mar Vol 4 No 9 pp 695–712 With 7 charts

This paper, by the late Dr Samuel T Darling completed by the aid of his co-workers, deals as its title shows, mainly with splenic enlargement, a method of malarial measurement first employed by DEMPSTER in India just on 80 years ago and tested to the full there, and, of course, elsewhere in the world, and latterly used in the United States with benefit Many autopsies convinced Darling of the general truth insisted on by MANSON, that it is in the finest capillaries, those of the grey matter of the brain, and in the reticulated sinuses of spleen and bone marrow [and placenta] that segmenting and sexual parasites chiefly congregate He explains this by suggesting a stickiness in these parasites The enlargement of the spleen produced by the effects of this accumulation he measured, as of old by finger breadths of projection by palpability in ordinary conditions and on deep inspiration with the child reclining, and converts those to weight measurements [on the principle of CHRISTOPHERS' " spleens]

More exact measurements, such as those relating to sitting height, have been dismissed as requiring too much exposure in the climate with which he dealt In Lee County spleen rates chills and fever and *A pseudomaculatus* run parallel

C L

BOYD (Mark F) **The Significance of the Data collected by Splenic Surveys.**—*Southern Med Jl* 1926 May Vol 19 No 5 pp 392–394

Boyd has studied for three years a group of four villages in the coastal lowlands of the state of Rio de Janeiro He is impressed with the necessity of measuring spleens by some method which will roughly express the degree of enlargement in relation to stature, that is its volume, and uses the following classification · spleen not palpable 0, palpable but within costal margin 1 not more than half-way to navel 3, thence to umbilicus 4 beyond umbilicus 5 He corroborates the well-known value of the splenic index, but holds it to be a more accurate measure with *P vivax* than with *P falciparum*, advises examination of individuals of all ages, and holds splenomegaly to be a personal indication of those in most need of intensive treatment by quinine In discussion Dr MAXCY held that measurement of spleen volume left him unconvinced and that the size of palpable spleens was the most dependable single index available

C L

SINTON (J A), assisted by BAILY (J. D) & CHAND (Diwan) **Studies in Malaria, with Special Reference to Treatment. Part IV. The Occurrence of Sexual Forms of** *Plasmodium falciparum* **in the Peripheral Circulation.**—*Indian Jl Med Res* 1926 Apr Vol 13 No 4 pp 895–916 [50 refs]

A valuable and thoughtful paper. In 1,789 thick film examinations of all fever cases among prisoners, made as soon as fever appeared, the monthly percentage showing crescents from July to February was respectively 4 3, 3 4, 0·5, 0·9, 10 3, 6·1, 4·4, 0 In 5,886 re-examinations of these men after treatment, the corresponding figures were 4·2, 2, 1·25, 2, 17·2, 8·2, 1·1, 0 There is then a seasonal increase in crescent carriers in November in Lahore, Punjab, India The sharp rise in November, and not earlier, may, however, need correlation with the fact that " prophylactic quinine " was given once weekly during September and October to all prisoners who were not under treatment or under observation after treatment The percentage of crescent carriers (equally with that of albuminuria) varies with the number of examinations made, for example, in 1,789 Indians 4·25 per cent showed crescents on the first examination, in 697 of these examined on numerous subsequent occasions this figure rose to 34·2 But this is not all the story for the first examinations took place immediately fever began, crescents are not seen until 5 to 10 days after a febrile attack It was found that in treated cases crescents became proportionately more numerous in those who had harboured many asexual parasites than in the opposite condition, though here again the question of detection in sparse infection has to be faced The matter is put thus DARLING showed that 12 gametocytes per cmm of blood were necessary to produce infection in a mosquito, ROSS has calculated that, using a thin film, the examination period for 1/12 cmm is 1 hour, most workers employ 15 to 20 minutes, accordingly many infective carriers must be missed The thick film uses 16 to 20 times as much blood as the thin, so that 1/12 cmm will be examined in 3 or 4 minutes and even a single crescent is unlikely to be overlooked

The production of crescents is then considered It is pointed out that BUCHANAN and THOMSON, as well as Sinton s own records, show that crescents develop when asexual forms are plentiful in the blood. It has been shown by many that they mainly develop in the bone marrow, much less frequently in the spleen The reaction of circulating blood is pH 7·4 ROUS has shown that certain actively metabolic organs, including the spleen, are " acid organs " and it is suggested that stagnant backwaters like the spleen and bone marrow will be more acid, though no evidence regarding the latter is offered. An interesting observation is mentioned A culture of *P falciparum* was overlooked for 10 days in an incubator, and when examined was found to contain large numbers of crescents and no asexual forms—although no crescents had been found in the patient's blood nor in the culture during the 72 hours in which it was examined The point is to be further elucidated in connexion with the hydrogen-ion concentration, since Sinton and BAILY have found a lowered alkali reserve during acute attacks of subtertain malaria, and crescents appear in maximum numbers about 10 days after such a paroxysm No correlation was found between splenic enlargement and crescents The life span of a crescent is considered If crescents be formed from asexual forms and if asexual forms be killed by quinine, then the further formation of crescents will thus be prevented and the life span of those present will be the measure of the normal life span of the crescent, provided, as seems to be the case, these are unaffected by quinine This point was determined by treating 591 cases with quinine for 4 to 7 days [*ante* p 542] and observing them weekly for 8 weeks The percentage found harbouring crescents before, during and after the 8 weeks was 6 9, 25·2, 15·6, 8·5, 3·7, 2, 0·7, 0·3, 0·3, 0 It is concluded that, while the life span may reach to 60 days, it is ordinarily 30.

' The presence of crescents after the finish of treatment cannot therefore, be taken as evidence that the treatment has not cured the infection, unless one believes in the parthenogenetic theory of relapse, which does not seem to be supported by our results, for in spite of the fact that no treatment was given during the observation period, no relapse was recorded among 127 of the patients who showed crescents in their blood, even although the majority of these patients were examined weekly for at least five weeks after the crescents could no longer be found

It is held that the quinine and alkali treatment [this *Bulletin,* Vol 20 p 300] gives better results in preventing the formation of crescents than does other treatment and concluded that as a practical measure, isolation should continue for 3 weeks after cessation of that treatment

C L

YORKE (Warrington) & WRIGHT (W Rees) **The Mosquito Infectivity of *P vivax* after Prolonged Sojourn in the Human Host.**—*Ann Trop Med & Parasit* 1926 Aug 13 Vol 20 No 3. pp 327–328

In March 1926, after the strain had been maintained in the human host [G P cases] for three and a half years its capacity to infect *A maculipennis* was again examined Forty seven mosquitos were allowed to feed three times on a patient of the fifty third passage and once on a patient of the fifty fourth passage Fifteen days after the first feed the mosquitos were divided into four groups each of which was fed on a general paralytic all four patients became infected with malaria Twenty-three of the mosquitos, which lived for longer than a week after the first feed, were dissected and of these 19 were found to be infected—3 with oocysts only, and 16 with sporozoites in the salivary glands

This observation shows that the strain in question had preserved unimpaired its power to infect mosquitos after 53 or 54 direct passages through man during a period of three and a half years

C L

WITVROUW Rapport sur études quinquinas [**Cinchona Studies.**]—*Bull Méd du Katanga* 1925 Oct Vol 2 No 5 pp 210–211

If interpretation upon probable omissions and displacements of decimal points be correct the report is as follows In 1907 32 *Cinchona succirubra* trees were planted at Mani and 25 *C calisaya* at Kinkala The latter plantation has disappeared the former contains 17 trees which by the marks of creepers on the bark, would seem to have been neglected The total alkaloids seem to have varied from 6 7 82 per cent and quinine sulphate from 2 28 to 3 98 from root and branch bark respectively C L

DOBSON (W H) **Unusual Manifestations of Malaria.**—*China Med. Jl* 1926 Apr Vol 40 No 4 pp 366–369

Three determined attempts at suicide with tertian rhythm were made by a married nullipara of 30 who had not smiled for over a year They were not repeated after intramuscular quinine the smile reappeared on the third day This was perhaps the most striking of these unusual manifestations of malaria Others were catalepsy, haemorrhagic colitis, purpura haemorrhagica general haemorrhage, gastralgia and a uterine swelling, reaching halfway to the umbilicus All were cured by quinine, the diagnosis in all being clinical Over 10 000 intramuscular injections of quinine (5 gr quinine sulphate, 2¼ gr tartaric acid and distilled water to a syringeful) have been given with some induration pain lasting three days. Only one abscess is reported (and that appeared in the immediate neighbourhood of the injection), the skin being swabbed with "equal parts of camphor gum and carbolic acid crystals."

In discussion Marguerite EVERHAM said of cerebral malaria "Manson is the only authority I have found who speaks of the increased spinal fluid. We have found that a lumbar puncture with removal of an ounce or more of fluid always gives relief." [*Cf.* the recent work of CORDES, *ante* p. 544 who instances striking success by puncture of the cisterna magna to relieve this condition.]

C. L.

BROSIUS (O. T.) **A Report of a Case of Cardiac Malaria.**—*Fourteenth Ann. Rep. Med. Dept. United Fruit Company, Boston, Mass.* 1925. pp. 127–129.

A heavy subtertian malarial infection in a copious drinker resulted in death with great cardiac weakness and eventual failure. Pericardial adhesions were found to be present, and the heart muscle showed cloudy swelling with very few young rings, one red corpuscle only in 123 being infected.

C. L.

BENHAMOU (Ed.) Le coeur dans le paludisme. [**The Heart in Malaria.**]—*Paris Méd.* 1926. July 3. Year 16. No. 27. pp. 25–28. [Refs. in footnotes.]

Murmurs, lowered arterial tension except for the period of the access, and a slow pulse, the last held typical of malaria, are touched upon but the lesion which is stressed is a dilated, spherical heart producing back pressure, oedema, enlarged liver, ascites and fluid in the pleura. The treatment for these conditions if they appear in malaria is first in importance, quinine and next digitalis given altogether or alternately. The results are striking.

C. L.

SLAUGHTER (William H.) **Symmetrical Gangrene of Malarial Origin.**—*Jl. Amer. Med. Assoc.* 1926. May 22. Vol. 86. No. 21. pp. 1607–1611. [59 refs.]

Symmetrical gangrene ending in the amputation of the right great toe, occurred in one delirious from a heavy infection as the blood showed, of subtertian malaria. The urine was smoky but without sugar. Intravenous quinine rapidly checked all symptoms. The methods of causation of gangrene and thrombosis and the differential diagnosis, are fully discussed.

C. L.

TRABAUD. Quelques considérations à propos d'un cas de polynévrite d'origine palustre. [**A Case of Polyneuritis of Malarial Origin.**—*Rev. Méd. et Hyg. Trop.* 1926. Mar.–Apr. Vol. 18. No. 2. pp. 33–36.

Noting that the literature would suggest that nerve manifestations of malaria rank in commonness with visceral ones but that the number of reported cases of affection of peripheral nerves appears to be only 73, Trabaud describes a case of refractory sciatica, without diabetes or visceral enlargement, with minute traces in the urine of albumin and urobilin, and with crippling sudden pain extending from the sacro-sciatic notch to the popliteal space. There were no objective nerve signs. The patient had been stationed in intensely malarious parts without any suggestion of malarial illness but had been taking 25 cgm. of quinine daily. *P. vivax* was present in the blood. 2 gm. [30 gr.] of quinine daily by mouth for 20 days and 30 cgm. of neosalvarsan intravenously every four days suppressed the attacks, but several of these treatments were required for complete cure.

C. L.

KARVE (S. D.) **Malarial Pneumonia.**—*Kenya Med. Jl.* 1926. July. Vol. 3. No. 4. pp. 116–118. With 1 plate.

Primary malarial pneumonia is held to be characterized by slight dullness usually left-sided, enlarged spleen, diminution of breath sounds, prostration, a slightly blood-tinged sputum and an increased pulse-respiration ratio, and to be cured by quinine; the prognosis is better than in true lobar pneumonia. Secondary malarial pneumonia shows dull patches with loud moist râles, the cough is very difficult to relieve and the prognosis good.

C. L.

INHELDER (Heinrich L.) Malaria und Gravidität. [**Malaria and Pregnancy.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. June 1. Vol. 30. No. 6. pp. 251–252.

Inhelder was questioned by a Chinese medical man regarding a Chinese woman eight months pregnant suffering from typical clinical malaria, who died of post partum haemorrhage the day after administration of 1 gm. [15 grs.] of quinine in five doses. He recounts two cases in his own practice of subtertian malaria with pregnancy at the 7th and 8th months treated with a combination of 20 to 30 drops of tincture of opium and 0.2 gm. of quinine hydrochloride, the total daily dose of quinine being 1 gm. and being continued for three days. Both women went to term.

C. L.

RAGAIN. Sur un cas de paludisme type malariae chez un nourrisson de deux mois. [**Case of *P. malariae* Infection in an Infant.**]—*Rev. Méd. et Hyg. Trop.* 1926. Mar.–Apr. Vol. 18. No. 2. pp. 45–46.

The two months old nursling of a mother infected with *P. malariae* began to show evidence of illness due to the same parasite and was cured by tannate of quinine and stovarsol on alternate days. It is held that mosquito bites produce such evident lesions in an infant that their non-detection is evidence of their absence and that the infection was either congenital or transmitted in the milk.

C. L.

ALLEN (George P. F.). **Some Post-Mortem Observations on Twenty-Six Cases of Subtertian Malaria.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. Mar. 18 & May 20. Vol. 20. Nos. 1 & 2. pp. 119–122.

Of these 26 cases in Jamaica half occurred during December and January. In 23 the parasite was detected in the spleen, liver and brain at the autopsy. In twelve of them there was definite evidence of kidney disease—fatty change in the organ ; in one, the only cachexial case, diffuse cortical haemorrhage. Four cases presented enlargement, with easy stripping of the capsule, firmness, little differentiation of cortex and medulla, and a greasy surface. The cells lining the tubules showed marked granular degeneration and the lumen might be filled with granular débris. Large mononuclear cells were frequent in the interstitial tissue, particularly where tubular degeneration was least marked. Malarial pigment was present, especially in the glomerular tufts, the squamous epithelium being absent in many malpighian corpuscles. This large grey degenerate kidney occurred in no other than malaria cases. Parasites were not found in the suprarenals in two with marked asthenia. Spontaneous rupture of the spleen occurred in one case and this organ was absent in another, being represented by three small nodules, the largest having a diameter of ¾ inch The pulp of these splenicuIi contained many subtertian parasites.

C. L

MOUFIELL (P P) L'influence sur le cours de la malaria d'une infestation vermineuse **Influence on Malaria of Helminthic Infestation.**]—*Russian Jl Trop Med* 1926 No 5 French summary p. 78 In Russian]

Examination of 1,060 malarial cases by FÜLLEBORN's method [presumably his flotation one] showed ova of intestinal worms in 35 per cent. and eosinophilia in 35 per cent The records of helminthic invasion [or, more accurately, the detection of the presence of eggs] in chronic malarial cases did not authorize the conclusion that helminthiasis predisposes to chronic malaria, but disinfestation might be followed by very favourable malarial results

C L

PETERSEN (William F.) **Blood Sugar during the Crisis of Malarial Fever.**—*Proc. Soc Experim. Biol & Med.* 1926. May. Vol. 23. No 8. pp 753–754. [3 refs]

"In the fasting patient we have determined that the period of the chill and rise in temperature is associated with a decrease in the blood sugar level This corresponds to the time of a peripheral leukopenia and a diminished concentration of blood protein With the crisis and fall in temperature, blood sugar increases, leukocytes increase in the peripheral blood stream and the blood proteins increase"

C L.

COLLINS (R. K.). **An Experience with Intensive Quinin Treatment under Field Conditions.**—*Southern Med. Jl.* 1926. May. Vol. 19. No. 5. pp. 383–392. With 11 charts in text.

This paper reports a continuation of work begun at Leesburg, Georgia, by DARLING in 1924 and completed by BOYD in 1925. The year 1925 was quite exceptional in that during ten days of January almost one-third of the normal yearly precipitation fell followed by an unprecedented drought, so that there were weeks during the malaria season when the catch of *A. quadrimaculatus* was nil. Under these conditions the standard treatment by quinine sulphate, recommended by the National Malaria Committee and associated with the name of BASS was given for 12 weeks from February 9th to May 7th 1925 to 54 children under conditions which seemed to ensure swallowing. The dosage was —2 years, 2 gr., 3–4 years, 3 gr. 5–7 years 4 gr. 8–10 years 6 gr., 11–14 years 8 gr. There were 15 untreated controls taken so far as possible from the same households as the treated. Of the 54 [? 53] treated, 25 were given the indicated dose once daily and 28 the dose once every other day. Examinations were made on the day of treatment and every 28 days thereafter till July 30th that of the blood being by a single thin film examined for 20 minutes before a negative result was returned. In all those taking the full treatment parasites which had been present in some 50 per cent. on February 9th disappeared completely and were first met with again on July 2nd in what (in the diagram) probably represents one case and apparently in three more on July 30th while in those taking half doses it would seem that one, two or three showed parasites throughout treatment and four by July 30th. The average haemoglobin was but little affected. Believing then that these reappearances after treatment are relapses the writer concludes —

> 'The use of the standard treatment as recommended is of definite benefit during its administration but it has been shown insufficient to effect a cure in chronic cases. To be effectively administered the method demands strict and expensive supervision. Therefore the experiment would seem to indicate that the standard treatment cannot be recommended as a public health measure.

In discussion GRIFFITTS said the experience in Alabama was that the standard treatment failed in 25 per cent. of patients, who were generally poorly nourished. KLIGLER attributed the Louisiana malarial improvement largely to quinine. FORT backed Collins' belief that reinfection was absent in this experiment. In reply Collins estimated that only 5 to 10 per cent. persisted with the treatment to the end and that under such conditions it must fail in its effect.

C. L.

ROW (Y. S.). **A Case of Malignant Tertian Malaria treated with Intravenous Quinine.**—*Indian Med. Gaz.* 1926. May. Vol. 61. No. 5. pp. 231–232.

In spite of continuously getting quinine sulphate by mouth 10 grains twice daily this prisoner showed persistent relapses of subtertian malaria, microscopically established, nor did intramuscular quinine disinfest. Quinine bihydrochloride intravenously three times on alternate days in 7 grain doses was followed by freedom from recurrence persisting 7½ months. Whether the urine was tested for quinine during the oral administration is not noted.

C. L.

BERKELEY-HILL (O. A. R.). **Notes on the Treatment of Benign Tertian Malaria with Cinchona Febrifuge.**—*Indian Med. Gaz.* 1926. July. Vol. 61. No. 7. pp. 332–334. [3 refs.]

The treatment advocated by ACTON and KNOWLES (1924) [this *Bulletin*, Vol. 21, p. 602] was tried in the Ranchi European Mental

Hospital, which lies at 2,200 feet, with very little indigenous malaria. It consists of :—

Pulv. cinchona febrifuge (Mungpoo)...	gr. x.
Pulv. acidi citrici	gr. xx.
Magnesii sulphatis	gr. xxx
Extracti glycerrhizae liquidi ...	dr. 1.
Spir. chloroformi	m. x.
Aquam ad.	oz. 1.

This dosage is continued three times a day for seven days, and twice a day for a further 24 days. All cases considered were of *P. vivax* infection. The relapse rate in 43 cases was 14 per cent. only. Some patients could not retain the mixture. In others it caused diarrhoea even when the magnesium sulphate was omitted. Berkeley-Hill writes that ACTON now prescribes as follows :—

Pulv. cinchona febrifuge	gr. x.
Pulv. acidi citrici	gr. xx
Magnesii sulphatis	gr. x ad gr. xv
Spiriti anisi	m. x.
Syrupi simplicis et Aq	aa oz. 1

C. L.

BAQUÉ (L.), CÉARD (L.), DEKESTER (M.) & MELNOTTE (P.). Essais de traitement du paludisme par la cinchonine [**Treatment of Malaria by Cinchonine.**]—*Arch. Inst. Pasteur d'Algérie.* 1925. Dec. Vol. 3. No. 4. pp. 352–358. With 10 charts.

A report on 22 persons indicates that cinchonine is as effective as quinine for the temporary cure of malaria caused by *P. vivax* and *P. falciparum* infections and as well supported. The cases could not be followed up.

C. L.

CLARK (H. C.). **A Malaria Survey of the Tela Railroad Company Farms and the Results of our Treatment of Malaria in the Farm Camps.**—*Fourteenth Ann. Rep. Med. Dept. United Fruit Company, Boston, Mass.* 1925. pp. 187–196. [2 refs.]

The drugs tested were quinine, stovarsol and Aiken's tonic pill whose composition is not noted. The impression is that "stovarsol has little, if any, effect either on malaria, as a prophylactic measure, or in acute malarial fever as a therapeutic measure" no distinction being drawn between tertian and subtertian malaria. Of 774 positives treated with 30 gr. of quinine daily for 14 days, only five were admitted to hospital during the 14 days following cessation of treatment.

C. L.

BOYÉ (R.). Action comparative du stovarsolate et du chlorhydrate de quinine dans la fièvre quarte paludéenne. [**Comparative Effect of Stovarsolate and Hydrochlorate of Quinine in Quartan.**]—*C. R. Acad. Sci.* 1926. July 26. Vol. 183. No. 4. pp. 325–326.

Stovarsolate of quinine contains 54·9 per cent. of base, the hydrochloride 82 per cent. They were compared on *P. malariae* in single doses corresponding roughly to these proportions, those of the stovarsolate being 1, 1·5 and 2 gm. Three days after taking the largest dose, parasites were reduced by 85–90 per cent. in the stovarsolate case, and not at all in the quinine one. Again the stovarsolate was given in 1 gm. doses daily till parasites disappeared from the cutaneous blood ; this occurred in 6, 6, and 4 days. For 0·5 gm. of quinine the figures were 11, 16, 16.

C. L.

VALENTI (Fr.) & TOMASELLI (A.). Lo stovarsolo nella cura della malaria. [**Stovarsol in the Cure of Malaria.**]—*Gazz. d. Osped. e d. Clin.* 1926. Mar. 21. Vol 47. No. 12. pp. 267–270. [5 refs.]

From the Institute of Clinical Medicine of the University of Catania, whose director is Professor FELETTI, the originator of the use of stovarsol for malaria, the writers report 6 cases of *P. vivax* infection all cured by stovarsol orally, generally in doses of 2 tablets daily ; 2 infections of *P. malariae* with 1 cure, and 5 of *P. falciparum* with 2 cures. In one of these last " cures " subtertian rings persisted abundantly for a month and he was supposed to have been completely cured in 2½ months. In the other 3 cases quinine had to be given on account of grave symptoms

C. L.

VIALATTE (Ch.). Sur le traitement du paludisme a *Pl. vivax* par le stovarsol [**Treatment of** *P. vivax* **Infection by Stovarsol.**]—*Bull. Soc. Path. Exot* 1926 May 12 Vol 19 No 5 pp. 359–373 With 9 charts in text. [15 refs.]

The writer reports 47 adults treated with stovarsol for infection with *P. vivax* He shows first a chart of a case clearing up clinically and microscopically without any treatment at all. Ordinarily stovarsol was given by mouth in tablets—1 gm. daily for 4 days, a 5 or 6 days interval, and repetition of the course and interval It caused disappearance of parasites from the peripheral blood without any particular selection for pigmented forms or gametes. Sometimes sodium stovarsol in 1 gm. doses was given intravenously. If the course comprised less than 16 gm of stovarsol, relapse occurred, and in two cases an infection with *P. falciparum* appeared after the cure of *P. vivax* infection. It is pointed out that the toxic effects which have followed stovarsol are colic, diarrhoea, erythema, urticaria, optic atrophy, tachycardia, vertigo, collapse In his 47 cases he had one of acute erythema after 4·5 gms, disappearing in a few days, but reappearing when the stovarsol was resumed. He had also two cases of glycosuria which he can refer less definitely to the drug. Stovarsol is then held to have on *P. vivax* a curative effect about equal to that of quinine, and the importance of this matter is held to lie in its being a first step in the process of obtaining some drug active against all malaria parasites, a discovery which is an imperative economic necessity.

C. L.

BASS (C. C.) **Observations on the Treatment of Malaria with Stovarsol.** —*Southern Med. Jl.* 1926. May. Vol. 19. No. 5. pp. 381–383. [7 refs.]

It is pointed out that in testing a drug supposedly curative in malaria it is essential that the good effects produced by rest in bed should not be attributed to the action of the drug. Moreover in New Orleans the opportunity of studying malaria in mass seems to have passed for ever. Accordingly, only two cases are reported. The first was an ambulatory one of quartan malaria. He received stovarsol by mouth, 0·25 gm. three times daily, without change in the parasites. Quinine sulphate 30 gr. daily removed all parasites within 48 hours. The second was a benign tertian case, in which parasites disappeared 48 hours after administration of stovarsol. The comment on the latter is—" We debated whether it [stovarsol] should be started at the time, feeling apprehensive that the symptoms were about to stop, and that spontaneous improvement was occurring ". In discussion, Dr Enrique Martinez CARRANZA noted that mercurochrome had in his hands failed to relieve malarial infection.

C. L

SINTON (J. A.), assisted by EATE (S. N) **Studies in Malaria, with Special Reference to Treatment. Part V. The Oral Administration of Stovarsol in the Treatment of Tertian Malaria.**—*Indian Jl. Med. Res.* 1926. July. Vol. 14. No 1. pp. 227–234 [16 refs]

The patients were relapsing European soldiers in a hill station in India where reinfection could be excluded They fall into six categories. (1) Ten were treated with stovarsol 3 gm. [48 gr.] in a single 1 gm. dose for three days ; (2) 18 with stovarsol as noted, and also with a quinine and alkali treatment during the first and third weeks—stovarsol 3 gm , quinine 27 gm. [420 gr.] , (3) 14 with stovarsol, and with quinine with alkali, during the first and third weeks—stovarsol 6 gm , quinine 27 gm.; (4) five cases with stovarsol in the first week, and quinine without alkali for the first week—3 and 27 gm ; (5) 25 controls with quinine and alkali and (6) 24 controls with quinine only Of (1) 100 per cent relapsed For the rest, the possible maximum and the observed minimum percentages of relapse were : (2) 77·7, 66·6 ; (3) 71·4 ; (4) 60 , (5) 72, 60 ; (6) 73·4, 66·6 The average number of previous relapses in the experimental cases was nine and in the controls six. The blood of all in the experimental series was examined by thick film daily before the administration of stovarsol, and thereafter hourly for ten hours Parasites were found--after 24 hours in all 49, after 28 and 34 hours in 47, in 48 hours in 6, in 50 hours in none It is believed, from the experience, that stovarsol may provoke or at least accentuate febrile attacks.

C. L.

MAZZA (Salvador), COSSIO (Rufino) & AYBAR ALBARRACIN (A.). Algunos resultados del tratamiento del paludismo por el Stovarsol sódico intravenoso [**Treatment of Malaria by Intravenous Sodium Stovarsol.**]—*Bol Inst. Clin Quirúrg* Buenos Aires 1926. Apr. No. 11 7 pp. With 3 charts in text.

In 17 cases a single intravenous injection of 1 gm. of sodium stovarsol sterilized a single tertian infection, and in one case, two injections " sterilized " a double one. The term " sterilized " denotes, however, in this instance merely that the parasites did not reappear in the peripheral blood during a maximum observation period of one month.

C. L.

TOSHIYU (Kaku) **On the Effect of Hydrochloric Sinomenine against Malaria.**—*Taiwan Igakkai Zasshi* (*Jl Med Assoc Formosa*) 1926 Jan No 250 English summary p 8 [In Japanese]

This drug would seem to be the active principle of *Sinomenium diversifolium* (Menispermaceae) The daily dose given was 0 2–0 4 gm in three portions Plasmodia disappeared in 2–9 days There has been no recurrence for 7 months Its use is recommended in place of quinine "as it has no disagreeable secondary effect on man These conclusions are based on 12 cases only, comprising all three species of plasmodium

C I

REITLER (Rud) Ueber die Behandlung der Malaria mit Cadmiumpraparaten **Treatment of Malaria with Cadmium Preparations.**] *Wien Klin Woch* 1926 Aug 12 Vol 39 No 33 pp 949 950

The search for some substitute for quinine which its high cost instigates has led to the trial of 716 B of Heyden, a solution of cadmium sodium tartrate containing 1 per cent of cadmium for intra venous use and a cadmium subsalicylate in oil with 5 per cent of cadmium for intramuscular use Although the report was issued after an observation period of 12 to 30 days there were relapses within that period The dosage was 0 5 cc twice weekly The injections were so painful that four were apparently as many as anyone accepted

C. L

SULDEY (L W) Du traitement du paludisme par la Smalarina Cremonese **Treatment of Malaria by Smalarina.**—*Bull Soc Path Exot* 1926 June 9 Vol 19 No 6 pp 431–435

At the recent Congress on malaria at Rome there arose the question of an experiment made in the French Sudan by an Italian Mission composed of Prof PERONI and Dr CIRILLO in June, July and August 1925, with the collaboration and control of the laboratory of Bamako The following is the laboratory report —

Forty children were treated by Prof PERONI himself for a month exactly as prescribed in the pamphlet in four languages which accompanies the drug The conclusions reached are sufficiently emphatic namely that smalarina has no curative action on the plasmodia no action in reducing the spleen, no action in preventing reinfections no action in avoiding relapses ' This conclusion is absolute if one takes for guide the capital sign of malaria the presence of the plasmodium in the blood which Professor PERONI has simply forgotten to mention in his communication '

C L

NIKOLAJVIĆ (Bor) Die Behandlung von Malaria mit Peracrina [**Treatment of Malaria by Peracrina.**]—*Arch f Schiffs- u Trop -Hyg* 1926 July 1 Vol, 30 No 7 pp 289–293 [6 refs]

From an experience of 10 cases, 9 of *P vivax* and 1 of *P falciparum*, the writer is unconvinced of the value of peracrina in malaria, but holds that it is an excellent provocative agent and should be combined with quinine and neosalvarsan in cases where a provocative influence is desired

C I

LARGE (D T M) & BONAVIA (V J) **Carbolic Acid in Malaria.**—*Jl Roy Army Med Corps* 1926 June Vol 46 No 6 pp 449–450

Three cases of subtertian malaria were treated with quinine till fever disappeared, 30 gr daily for 3–7 days and then with Tr iodi and acid carbolic aa m 2 t d s for 10 to 14 days One case relapsed under the treatment In all crescents persisted although they "were distinctly fewer at the end of the treatment, but it is probable that the rest while in hospital and the nourishing diet played their part in the reduction" [See SINTON p 813 *supra*]

C I

COUTO (Miguel) Betrachtungen und Erfahrungen ueber Beriberi und Malaria [**Observations and Experiences in Beriberi and Malaria.** — *Arch f Schiffs- u Trop -Hyg* 1926 July 1 Vol 30 No 7 pp 275–284

The conclusion of this discourse as regards malaria, is that in tertian malaria quinine and methylene blue are equally effective, and that where the infection is refractory to one the other should be substituted In subtertian malaria they should be combined intravenously from the beginning No evidence is offered

C I

CORDES (Wilhelm) **A Contribution to the Therapy of Cerebral Malaria.** —*Fourteenth Ann Rep Med Dept United Fruit Company Boston, Mass* 1925 pp 197–201.

It may be of value to English readers to consult in their own language a paper on the importance of decompression in cerebral malaria by puncture of the cisterna magna The substance has already been dealt with in this *Bulletin* (*ante* p 544) in abstracting a paper by the same author

C L

HUGHES (T A) **The Origin of Urobilin in Persons who have suffered from Chronic Malaria.**—*Indian Jl Med Res* 1926 July. Vol 14 No 1 pp 157–169 [19 refs]

The investigations recorded, evidently independently conceived, are on the same lines as those of KINGSBURY (*ante*, p 533) They lead to the conclusion that in uncomplicated chronic malaria with latent haemolytic jaundice there is no relationship between urobilinuria and bilirubinaemia In chronic malaria with toxic jaundice urobilin disappears from the urine when the condition of the glandular cells of the liver is such that bile pigment does not enter the bowel

C. L

LUKOWA (A. J.). Halbmondkörper bei Malaria. [**"Crescents" in Malaria.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. May 1. Vol. 30. No. 5. pp. 183–188. With 9 text figs.

The term crescent as used by the writer does not apply to the gametocytes of *P. falciparum* but to certain pale bodies with a rim often holding Schuffner's *dots,* which, if the writer be really tied to the heavens for simile, he would better term annular eclipses. They appear to be erythrocytes, and may or may not contain malaria parasites. Four cases are discussed, three in infants, the peculiar normal blood picture at this stage of life being without mention. The writer notes that these bodies have been explained as artefacts. The figures seem to the reviewer to give little help in their elucidation. No effort at wet staining was made, the preparations being evidently thin smears stained with Giemsa.

C L

LLOYD (R B) & MITRA (G. C.). **The Wassermann Reaction in Malaria.** —*Indian Jl. Med. Res.* 1926. July. Vol. 14. No. 1. pp. 135–144. [30 refs.]

The Imperial and Assistant Serologists discuss the literature upon the Wassermann reaction in malaria. They use a sensitive system, putting up each serum against three antigens—(1) cholesterinized alcoholic; (2) Bordet's; (3) cholesterinized Bordet's, when estimating the effect of treatment. In 85 cases of malaria the results were fully positive 4, partially positive 8, negative 61, incomplete negative 12 Only one of the twelve positive cases gave a definite history of syphilis. It is, however, held that 14 per cent. is well within the syphilis rate of Calcutta, so that there is no evidence that in the positive malaria cases the positive reaction was due to malaria.

C L.

RADOSAVLJEVIĆ (A) & RISTIĆ (L.). Ergebnisse der Senkungsreaktion und der Bluteiweissbestimmung bei Malaria. [**Sedimentation Reaction and Determination of Blood Albumin in Malaria.**]—*Ztschr. f. d. gesamte experim. Med.* 1926. June 30. Vol 51. Nos. 1–2. pp. 48–80. With 11 text figs. [21 refs.]

Active malaria is characterized by an acceleration of sinking of blood corpuscles in citrated blood which, as the activity continues, reaches a maximum, varying in each case, and returns to normal if the latent period be sufficiently long. This change results from the cumulative effect of the different paroxysms; at the height of each there is indeed a relative lengthening of the velocity of precipitation, an increase in the fibrinogen and an absolute decrease in the total albumin, but during the apyrexial period the process is reversed, so that the rate of sinkage is more rapid than it originally was, accompanied by a relative increase of the total albumin and a relative lessening of the fibrinogen. In malaria, quinine and neosalvarsan produce a rapid return to normal conditions corresponding sufficiently to the disappearance of parasites. Methylene blue, peracrina and hydrochloric acid have no such influence nor has quinine in cases other than malaria. The writers suggest that there is here a practical means of diagnosing malaria.

C. L.

SAVTCHENKO (J G) & BARONOFF (J M) [De la spécificité de la réaction de fixation dans le paludisme] [**Specificity of Fixation Reaction in Malaria.**]—*Jl Méd de Kazan* 1925 No 25 pp 1011–1021 [Summarized in *Bull Inst Pasteur* 1926 July 31 Vol 24 No 14 pp 620–621]

Liver extract is used for antigen and syphilitic reactions are excluded Antigen coming from one with subtertian rings fixes complement only in those presenting these rings and not in those presenting gametocytes, and *vice versa* Neither antigen reacts with tertian malaria Antigen coming from one with tertian gametocytes and schizonts acts strongly upon chronic gametocyte carriers less strongly in recent attacks and not at all with subtertian malaria

C I

GRANT (A R) & SILVERSTON (J D) **The Whittingham (W) Strain of Artificially Induced Malaria. Observations made during the Treatment of General Paralysis and Tabes Dorsalis.**—*Jl Trop Med & Hyg* 1926 Apr 15 Vol 29 No 8 pp 117–122 With 2 charts in text [14 refs] Also in *Jl Mental Sci* 1926, July Vol 72 No 298 pp 346–355 [14 refs

The full story of this strain is told Obtained from a *P vivax* infection acquired in India it has passed through 60 direct transmissions over 3½ years covering 150 cases Infection has been by subcutaneous injection of about 2 cc of infected venous blood Morphologically in over 10 000 films taken at all stages of the cycle the parasite has retained its natural form and character throughout the period The trophozoite was the form commonly appearing first, usually after sometimes coincident with and occasionally 2-4 days before fever occurred Parasites reached their maximum in cutaneous blood about the 6th or 10th day of illness, diminution in numbers amounting even to complete disappearance being then the rule Seven trophozoites and the recognized combinations of sexual and asexual forms, have occurred in one red corpuscle The clinical and clinical pathological findings showed an irregular pyrexia preceding the invariably occurring rigors and frank attacks Quotidian fever has throughout been the commonest type but a pure tertian type is increasing in frequency Temperature in early cases reached 103 6°–106 2°, and at the present time varies between 105° and 107 2° Of 500 paroxysms during winter, 81 4 per cent occurred between 7 a m and 7 p m, and 85 2 per cent of them between 11 a m and 3 p m irrespective of the time of inoculation with the maximum at 2 p m during summer time the corresponding figures are 74 7 per cent and the maximum hours 2–5 p m The attacks were not necessarily regular —for instance, one case showed 5 tertian rigors 5 apyrexial days and 7 quotidian rigors stopped by quinine Spontaneous disappearance of parasites was as usual observed in certain cases Gastro-enteritis with vomiting and diarrhoea, was occasional Clinical jaundice with bile in the urine occurred in four cases, later than the 5th and generally after the 7th paroxysm was of grave prognostic import and called for immediate treatment. Urobilinogen was slightly, but infrequently, increased Albuminuria was common usually a trace only, but in two cases was decidedly increased with constitutional reactions calling for immediate treatment of malaria Anaemia was usually mild, clearing up within a week of instituting quinine treatment In one in which it did not, the blood picture closely simulated pernicious anaemia, under oral and intravenous arsenic conditions became normal in a fortnight

Treatment was by 30 gr. of quinine on three consecutive days. The first dose produced an extraordinary diminution in parasites, and susceptibility of the parasites was so great as to render mere control of the fever impossible. Reinfection, 22 days to 19 months after cure, was successful in all cases, judged by the appearance of parasites in the blood, though paroxysms occurred in 58·8 per cent. only, so that an immunity [or tolerance] was established with its maximum at about 12 months. Relapses occurred in less than 2 per cent. of cases, in one case after 90 and in the other after 60 gr., disinfestation being apparently effected after a second 90 gr. course.

C. L.

PIJPER (Adrianus) & RUSSELL (Elizabeth D.). **Malaria Treatment of General Paralysis: a Report on 44 Cases.**—*S. African Med. Rec.* 1926. July 10. Vol. 24. No. 13. pp. 292–305. [91 refs.]

This paper deals mainly with neurological aspects. A pure *P. vivax* infection was obtained only with difficulty. Forty-four cases were treated in mosquito-proof wards. "There is nothing to be gained by employing mosquitoes, and very often this does not even work." 0 5 to 20 cc. of blood was injected subcutaneously over a wide area with vigorous massage. The incubation period varied from 3–24 days. In 14 cases there occurred Korteweg's initial fever. It was aimed to allow 12 to 16 paroxysms, the blood being regularly examined. If these ceased they could sometimes be reintroduced by injection of 0 5 to 1 cc. of liq. adrenalin. An injection of 0·6 gm. neosalvarsan was always given whether the fever had ceased spontaneously or not; parasites could not be found 36 hours later. This dose was repeated a week later, the patient being confined to bed from the inoculation to the final neosalvarsan injection. No quinine was given. No relapse occurred. There were 11 deaths, 11 complete mental remissions, 11 mental improvements and 11 physical improvements in 44 cases detailed in a table.

C. L.

DUNNE (J.). **The Malarial Treatment of General Paralysis.**—*Jl. Mental Sci.* 1926. July. Vol. 72. No. 298. pp. 343–346.

Infection was by subcutaneous injection of 2 to 4 cc. of defibrinated blood, the incubation period varying between 7 and 14 days and being shorter with the larger dose. Of 35 injections, two failed entirely; some patients required several injections (one 4). Malarial attacks were tertian in rhythm. Fever disappeared after six rigors in three-fourths of the cases. After quinine treatment the majority of these were reinfected, with, in general, "spontaneous recovery after three or four rigors." Mentally, eight greatly improved and seven slightly. Five died (pneumonia one, epileptiform seizures two, dementia two). Of three subsequently examined, one showed spirochaetes. The ease with which the malaria can be controlled is noted; the dose of quinine is stated merely as 10 gr. thrice daily.

C. L.

ELLERY (Reg. S.). **On the Treatment of General Paralysis of the Insane by Malaria.**—*Med. Jl Australia* 1926 Apr 10 13th Year. Vol 1. No. 15 pp 401–404 [5 refs.]

Of six patients two died, one of convulsions after the third malarial paroxysm and one of pneumonia showing itself after the first rigor Three were discharged from the mental hospital to ordinary life. Treatment was by 45 grains of quinine, 5 gr three times a day for three days. One of the four survivors relapsed malarially

C L

PFISTER (O.) Ueber Malariabehandlung der Progressiven Paralyse. [**Malaria Treatment of G. P.**]—*Schweiz Med Woch* 1926 May 1. No 17 pp 391–393

In 36 cases of general paralysis treated by induced malaria, of which 10 were women, death occurred in four One died of blackwater fever uninfluenced by quinine or other means, two of heart failure one after the 5th and another after the 12th attack, the last of embolism of a coronary artery

C L

KLING (C.) Le traitement par le paludisme de certaines affections du système nerveux constitue t'il un danger de la propagation du contage? [**In Treatment by Malaria is there Danger of Spread of Infection?**]—*Semana Med* 1926 June 3 Vol 33 No 22 (1690) pp 1217–1219

In 1923 KJALLMARK started a strain of *P vivax* at Upsala Sweden, for the treatment of general paralysis It has passed by inoculation through 150 persons, there being 30 direct passages Gametocytes became more and more rare but were noted again in the autumn of 1925 These malaria cases were kept in screened wards, nevertheless anopheles were found within these wards, so that protection was incomplete Anopheles were particularly plentiful in the surroundings of the hospital in July and August 1925, and in August two cases of infection with *P vivax* appeared within 10 days of one another in a ward in which no case of malaria had lived for six months, but situated within 100 metres of one in which the malarial treatment of general paralysis was being carried out The last malarial epidemic in Sweden was in 1887, and during the last five years there have only been five indigenous cases of malaria in the country These two cases proved very refractory to quinine, continuing infected for a year, which is held to show that the plasmodial race, usually so amenable to quinine, had augmented its virulence by a single mosquito passage In the autumn of 1924 *A maculipennis* was infected from this almost gameteless strain and passed on the infection to another person The need for precautions against spreading malaria used by inoculation to treat general paralysis is pointed out

C L

Mörch (J R). Das Verhaltnis einiger Seroreaktionen wahrend der Behandlung von Paralyse mit Malaria tertiana [**Seroreactions Compared during the Treatment of G. P. with Malaria.**]—*Deut Med Woch* 1926 Apr 30 Vol 52 No 18 pp 740–742 [8 refs]

The Wassermann and Sigma reactions were tested in a number of general paralytics—before injection with benign tertian malaria, after five attacks, after ten attacks, and later up to six months The controls were a number of non-syphilitic mental cases mostly dementia praecox, all negative to both tests before treatment Of these 11 controls, malaria induced a +Wassermann reaction in 10 and a positive Sigma reaction in 2 Of the 65 paralytics 19 showed no serum reaction before, but a positive reaction appeared after malaria in 18 it was positive to the Wassermann test and in 6 to the Sigma The rest showed reactions before treatment, which in 26 were not increased and in 20 were increased by treatment The Wassermann antigen was extract of calf s heart of human heart or of syphilitic liver, all giving identical results The Sigma reaction is the precipitin reaction of Dreyer-Ward Malarial injection was by 4 cc of venous blood drawn between febrile attacks of benign tertian malaria, injected apparently subcutaneously Incubation periods averaged 14 days and varied from 6–21 Quinine treatment was by three daily doses of 0 25 gm [4 gr] each, with various intermissions and was continued for 1 3 months The disinfestant results are unstated

C I

Fleming (G W T H) **A Note on the Boltz Test in the Cerebro-Spinal Fluid after Malarial Therapy in General Paralysis.**– *Jl Mental Sci* 1926 July Vol 72 No 298 p 376

The Boltz test* is not due to cholesterol but apparently to some combination or modification of this It is almost invariably positive in general paralytics and negative in other psychoses Of ten cases, nine positive previous to the malaria became negative afterwards while one previously negative became positive

C L

Mauriac (Pierre) Les veritables promoteurs du traitement de la paralysie generale par le paludisme **The True Promoters of the Treatment of G.P. by Malaria.**]—*Jl Méd de Bordeaux* 1926 Apr 25 Vol 103 No 8 pp 322 324 [1 ref]

Between Hippocrates s Quartana ab aliis magnis morbis vindicat ' and von Jauregg s malarial treatment of general paralysis Mauriac interposes the very serio comic work of Menapl (1561) who lauds quartan as a dissipator of bile and a curer of the tyrannical melancholia, generous a liberator and the deadly and implacable enemy of convulsions, and Legrain (1913) who advised quartan blood intravenously or a cachet of the clot swallowed as curative of grave affections generally incurable —eczema chronic suppuration hepatic syphilis lupus leprosy inoperable cancer It really seems astonishing that anyone ever dies in the tropics

C I

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* Place 1 cc of spinal fluid in a Wassermann test tube, add 0 3 cc of acetic anhydride drop by drop shake, add 0 8 cc of concentrated sulphuric acid drop by drop, shake examine against a white background after 5 minutes A blue tinge (blue pink or lilac) is positive

Barnhoorn (J. A. J.). Een zeer gunstig afgeloopen malaria-behandeling bij dementia paralytica. **[A Very Favourable Result in the Malarial Treatment of Dementia paralytica.]**—*Nederl. Tijdschr. v. Geneesk.* 1926. Apr. 17. 70th Year. 1st Half. No. 16. pp. 1615–1617.

de Jongh (J.). Malaria behandeling bij dementia paralytica. **[Malarial Treatment of Dementia paralytica.]**—*Ibid.* May 22. No. 21. pp. 2083–2084.

Diarrhoea appeared in the single case reported by Barnhoorn as treated with malaria for general paralysis. De Jongh reports seven cases of this treatment. Infection was by injection. They are without malarial interest.

C. L.

Sergent (Edmond & Etienne). Critique des méthodes antipaludiques. **[Critique of Antimalarial Methods.]**—*Semana Méd.* **1926.** Apr. 22. Vol. 33. No. 16 (1684). pp. 828–835. [7 refs.]

In the nature of things this paper covers much familiar ground. Retrogression of malaria may be due to the healing effects of prosperity or to the application of measures directed more definitely against the plasmodia, to action taken affecting the soil or the seed. The principles and details—with the advantages and disadvantages as they concern the traveller or settler whether single, in groups or in armies—are considered. Regarding isolation, as for instance of Europeans from fatalistic natives, a mosquito flight of 2 km. is taken as the distance required between the former and larval breeding places or indigenous inhabitants.

For prophylactic quinine the standpoint taken is that it is unknown whether quinine in the blood prevents or cures infection. It is, however, tacitly assumed that it is quinine which is the curative antiplasmodial agent and that taken daily at the evening meal it is in greatest concentration in the blood when most required. The dose advocated is 0·4 gm., and half that quantity in children of 4–12 years The advantages claimed are the prevention of grave attacks, the infection being strangled or at least rendered latent, and the production of immunity to reinoculation, that is to say acclimatization without risk. A very significant remark is quoted from General Leblois commanding the French Eastern Army in 1917 : "There is no military necessity which can oblige a commander to lose men by illness, that is to say, without inflicting loss on the enemy." For an army, it is held that quinine should be regarded as a ration and that it must be controlled by urinary examination. Antilarval measures are divided into those which remove useless, non-domestic water and those which disinfect useful domestic water. The engineer who removes the former works equally in the interests of hygienic and economic progress, but the drainage canal he makes is as definitely a breeding place as the marsh he drains—he substitutes for a huge diffuse inaccessible spot one which is linear and accessible. Since in the Mediterranean basin development of anopheles occupies two or three weeks, alternation at least every 15 days of water distributed for irrigation may be an antilarval measure of value. Prophylaxis can only be applied with success to a disciplined, willing population.

C. L.

DARLING (Samuel T.). **Mosquito Species Control of Malaria.**—*Amer. Jl. Trop. Med.* 1926. May. Vol. 6. No. 3. pp. 167–178. [4 refs.]

" Every malaria problem should first be subjected to field studies, to determine its specific nature and define its limits." It was found that in cultivated sawahs [paddy fields] no *A. aconita* larvae, the locally implicated anopheles, could be found ; where they had been neglected, grassed over, with a little water in one corner, this mosquito was present as it was in irrigation ditches. Here was an opportunity for species sanitation by clearing and keeping clean ditches and keeping all sawahs in cultivation. The results were : easier tillage, a crop increased 25 to 50 per cent., a reduction of spleen rate from 71–43 per cent. and an influx of people from neighbouring parts, for which there had been no inducement in the former deplorable health conditions of the population.

C. L.

DEEKS (W. E.). **Problems in Malaria Control.**—*Fourteenth Ann. Rep. Med. Dept. United Fruit Company, Boston, Mass.* 1925. pp. 170–186. [3 refs.]

The conditions influencing malarial incidence are put as being rainfall, site, screening, individual or racial immunity, and physical condition. Regarding screening, it is noted that 29 per cent. of unscreened native population and 6·6 per cent. of non-immune foreigners living in screened houses were found infected. It is noted how large a number of the malaria-infected also harboured worms, but controls were not instituted. This question of physical condition is emphasized —"It is our belief that quinine takes care of malaria infections only when the patient is otherwise in good physical conditon," and it is held that if quinine fail some other drug should be tried. For chronic infections the author advises one or two tablets after each meal, each containing, in grains, quinine sulphate 2, reduced iron $\frac{3}{4}$, arsenious acid $\frac{1}{50}$, extract of nux vomica $\frac{1}{8}$. Stovarsol was effective in a chronic relapsing tertian malaria, and unsuccessful in two acute subtertian cases, although this distinction is not perhaps appreciated in the original.

C. L.

IYENGAR (M. O. T.). **The Importance of Animal Prophylaxis in Malaria.**—*Rep. Proc. Fifth Entomological Meeting held at Pusa, 1923.* pp. 203–212. [19 refs.]

After reviewing the suggestion of ROUBAUD regarding animals as screens for man, Iyengar classifies Indian anopheles under four heads. (1) Species essentially wild—*A. gigas, barbirostris, aitkeni* and *lindesayi* ; (2) Species preferring animals to man—*A. hyrcanus* (*sinensis*), *fuliginosus, jamesi, maculipalpis* and *maculatus* ; (3) Species preferring man to animals—*A. vagus, subpictus, jeyporensis* and *culicifacies* ; (4) Species living solely on human blood—*A. minimus, listoni, varuna,* and *stephensi*. Future experiments are outlined.

C. L.

PALESTINE. **Proceedings of the Twelfth Meeting of the Antimalarial Advisory Commission, Jerusalem, 27th May, 1926.** [HERON (G. W.), Director of Health, President.]—21 pp. [MS. received from Dept. of Health, Jerusalem.]

The following are a few of the interesting points contained in these proceedings. The major works are progressing steadily. BRIERCLIFFE notes the recorded deaths from malaria in Palestine for the last six years as follows, 526, 94, 67, 78, 33, 13. More reliable annual figures for Jerusalem are 35, 30, 17, 5, 5, 2, 2 The totals of hospital treatments and of those treated for malaria for the last four years are, 283,156 and 20,297; 270,945 and 13,280; 285,215 and 11,732, 339,795 and 7,249. Spleen rates have fallen over the country from 54·5 in 1918 to 3·1 in 1925, and in Jerusalem in the same period from 44 to 0·8 The Arab population, the largest and economically the most important, is much most heavily affected. Since the war, the economic condition has bettered, so that the whole improvement is not claimed as being due to deliberate antimalarial work

Dr. SHAPIRO spoke of the killing of hibernating mosquitoes in dwellings and stables in January or February by smoking, when the sluggish insect flew to the single spot of light and was killed by hand or trapped by oiled glass. If the catch was large, the process was repeated. The process, if thorough, was held to delay considerably the first anopheles brood. Similarly, hibernating larvae were sought, preferably on a warm bright day, which tempted them to the surface, and destroyed by petrolization or by removal of their haunts.

Colonel HERON emphasized the local difficulties of effective drainage and the matter of attaining success by constant trial.

C. L.

ARÁOZ ALFARO (Gregorio). Orientacion y estado actual de la lucha antipalúdica. [**Orientation and Present State of Antimalarial Work.**]—*Semana Méd.* 1926. July 15. Vol. 33. No. 28 (1696). pp. 117–126. [9 refs.]

This address was delivered at the third National Congress of Medicine, by the President of the National Department of Hygiene, Argentina, and deals with malaria as it affects that country (that is to say, a tenth of the population or about a million persons) with retardation of progress and wealth, quite apart from some 350 deaths yearly. The period of neglect of public health has happily passed. Preventive quininization, it is noted, has considerably diminished pernicious attacks, cachexia and mortality in Italy and Greece. Screening is unsuitable for most of the houses concerned. A striking example of the value of antilarval work is the conversion of a dead branch of the river Dulce in Santiago del Estero into a fine park, and the disappearance of malaria from a population which had suffered to the extent of 80 per cent. The necessity of parallel legislation in the various States and of collaboration between municipal authorities, owner and neighbours is insisted upon. A national commission consisting of medical men, hygienists, biologists, engineers, sociologists, philanthropists and men of public affairs is urged to maintain orientation and continuity in antimalarial work.

C. L.

GAROFALI (Filiberto). Dieci mesi di lotta antimalarica in Amaseno (Lazio). [**The Malaria Campaign in Amaseno (Latium).**]—*Riv. di Malariologia.* 1926. Mar.-Apr. Vol. 5. No. 2. pp 157-163. [English summary p 251]

"In Amaseno, a town of about 3,000 inhabitants, malaria has been increasing, a fact which the author attributes in great part to deforestation The same conditions are noted throughout the region A survey of school children showed: spleen index 90, parasite index 69, average haemoglobin 30-35 The author also attributes to malaria the high mortality from pneumonia (12 6 per cent in 87 cases) [In U S A the mortality in a series of 6 500 cases was 36 per cent]

The anti-malarial campaign consisted almost exclusively of quininization, for lack of other means In the period of ten months the general malaria index was reduced from 95 to 15 20 Attention was given to the education of school children with regard to malaria "

C L

ZIEMANN (H) **Remarks on Clayton Lane's Criticism of my Monograph on Malaria and Blackwater Fever in the** *Tropical Diseases Bulletin*, **1925 Vol. 22. No. 4. p 338** —*Jl Trop Med & Hyg* 1926 Mar 15 Vol 29 No 6 p 89

LANE (Clayton) [**Ziemann's Malaria and Blackwater Fever.**]—[Correspondence]—*Ibid* July 1 No 13 p 200

Professor Ziemann's article consists of nine numbered paragraphs in which he offers objections to statements in Colonel Clayton Lane's review Clayton Lane replies in a letter dated April 8th, that in his reconsidered judgement, the review requires no alteration and asks those interested to undertake the necessary comparisons for themselves, he suggests that Ziemann has imperfectly understood what he (Lane) wrote

A G B

i ROMBACH (K A) **Malaria tertiana.**— *Nederl Tijdschr v Geneesk* 1926 May 8 70th Year 1st Half No 19 p 1914 [2 refs]

ii DE JONG (Jac J) Malaria tertiana met lange latentie [**Long Latent Tertian Malaria.**]—*Ibid* July 10 70th Year 2nd Half No 2 p 163

iii KOLLEWIJN (J R) Twee tertiana-gevallen met lange latente periode. [**Two Tertian Cases with Long Latency.**]— *Ibid* May 22 70th Year 1st Half No 21 pp 2084-2085

iv GOBL (A) [Ein Fall von mit Stibenyl behandelter chinin-resistenter Malaria tropica] [**Case of Quinine-Resistant Malaria Tropica treated with Stibenyl.**]—*Gyogyaszat* 1926 No 1 [Summarized in *Arch f Schiffs- u Trop -Hyg* 1926 June 1 Vol 30 No 6 p 261]

v KOUN Evolution du paludisme dans la ville et les environs de Hué [**Malaria in the Town and Environs of Hué, Annam.**]—*Bull Soc Path Exot* 1926 May 12 Vol 19 No 5 pp 335-337

vi. PUCA (Annibale) Sindrome cerebellare e psicosi da malaria [**Cerebellar Syndrome and Psychosis in Malaria.**] - *Riforma Med* 1926 May 17 Vol 42 No 20 pp 461-463 [14 refs]

i A woman showed "Plasmodium malariae" in blood investigated on account of tertian fever in Utrecht She had last been in Edam about three months earlier, in which place she probably became infected It is noted that some unknown factor determines the length of latency.

ii. A youth of 17 had lived at Leiderdorp and Katwijk, neither of which is held to be a possible place of infection Tertian malaria, microscopically established, showed itself on 26th May, 1926 It is believed that infection must have been acquired at Wormerveer (Noord-Holland) in August, 1925, and remained latent for about nine months

iii Two microscopically established cases are reported which first showed malaria 9 and 12 months after coming to Helmond These are set down as the latent periods on the ground that there is no malaria in Helmond, so that [so the circle runs] regarding every case which shows malaria in Helmond it may with certainty be said that it was acquired elsewhere

iv The abstract merely states that a man of 37, infected in Greece, had his first rigor in Budapest He was treated for about four months with quinine and salvarsan, consuming 78 gm of quinine He then had in four months 1 4 gm of stibenyl in doses of 0 1–0 3 gm Crescents disappeared 13 days after the last injection

v Referring to KÉRANDEL (Soc Path Exot meeting, 9 12 25) Koun describes the condition of Hué in 1910 and 1911 when 1,176 cases of malaria were treated Of 200 specially examined, 175 came from Hué itself and these infections were quartan 8, subtertian 20, benign tertian 147, while the parasite index in children varied between 15 6 and 44 At the present time the splenic index is infinitesimal

vi A single case of infection with *P vivax*.which recovered is described in great detail It is concluded that cerebellar insufficiency is the most frequent central nervous symptom in malaria, that prognosis is nearly always good, that neosalvarsan in small doses is a provocative, and that quinine with arsenobenzol is the best and safest treatment

C L

i NOSSINE (V K) Sur un cas d'infection paludique congénitale [**Case of Congenital Malaria.**]—*Russian Jl Trop Med* 1926 No 5 French summary p 79 [In Russian]

ii SCHWARTZMANN (A M) L'incidence du paludisme chez la population de la ville de Kazan d'après les données de l'hiver 1925–26 [**Incidence of Malaria in the Town of Kazan, 1925-6.**]—*Ibid* French summary p 79 [In Russian]

iii MIRZOIAN (A A) **The Malaria in the Jdjevan Districts and the Measures taken against it and the Discovery of the** *Anopheles superpictus* **Grassi in it.**—*Ibid* No 4 English summary p 76 [In Russian]

iv BISBINI (Bartolomeo) Osservazioni cliniche epidemiologiche su di un caso di malaria autoctona nella città di Modena [**Case of Autochthonous Malaria in Modena City.**]—*Gazz d Osped e d Clin* 1926 Feb 21 Vol 47 No 8 pp 171–174 With 1 chart [11 refs]

v MAIAUSSÈNE Le paludisme à Gorée [**Malaria in Gorée.**]—*Bull Soc Path Exot* 1926 June 9 Vol 19 No 6 pp 507–511

vi AUDAY (I) & ARANA (Enrique L) Un caso de asma palúdica [**Case of Malarial Asthma.**]—*Semana Med* 1926 June 3 Vol 33 No 22 (1690) pp 1214–1215

vii v SCHNIZER Dienstbeschädigung fur Psychose nach Malaria angenommen [**Service Casualties due to Psychosis following Malaria.**]—*Med. Klin* 1926 July 2 Vol 22 No 27 (1125) pp 1045–1046

viii BANNERJEE (Kartick Chandra) **An Interesting Case of Malaria.**—*Indian Med Gaz* 1926 June Vol 61 No 6 pp 285–286

ix CHATTERJEE (S) **Quinine Urticaria, and Absorption of Quinine in Malaria.**—*Indian Med Rec* 1926 June Vol 46 No 6 p 171.

i *P vivax* was detected 23 days after delivery in mother and child in March in Moscow, at a season said to be without anopheles

ii. Fever cases in Kazan have fallen from 66 to 39 per cent, being highest in quarters near anopheline breeding-places A spring predominance has given place to a summer one caused by *P falciparum* In 1926 relapses were greatest in autumn

iii Sanitary measures have been continued in this mountainous part of Armenia for three years Of 889 mosquitoes 441 were *A maculipennis*, 436 *A superpictus*, and 12 *Culex* sp In 137 of 194 stables examined between November and February, 1925, "malarial" mosquitoes were found

iv The author minutely describes a case of infection by "the parasite of malaria" showing itself as rings seen in every field No case has been reported in the city of Modena for many years Possible means of infection are discussed.

v The Island of Gorée, off Senegal, has been shown to be indigenously infected with malaria This has been confirmed by the Pasteur Institute, Dakar

vi No parasites were found and the percentage of large mononuclear leucocytes is placed at 0 Quinine gave relief

vii Malaria was followed by the appearance of epileptic convulsions with great nervousness, and must be borne in mind among the causes which, through psychosis, prevent efficient military service

viii A case of cerebral malaria with unconsciousness and repeated tonic convulsions recovering rapidly under intravenous quinine administration. It is recorded without comment that the parasite present was *P vivax*

ix An abstract of literature already abstracted in this *Bulletin*

C L

ASCOLI (Vittorio) La malaria cronica —*Riv di Malariologia* 1926 Mar-Apr Vol 5 No 2 pp 164–181 [English summary p 252]

BEWLEY (Geoffrey) The Treatment of General Paralysis of the Insane by Malaria, with Reports of Two Cases —*Irish Jl Med Sci* 1926 Aug 6th Ser No 8 pp 358–364 [12 refs]

BUNKER (Henry A) Die Bedeutung der Gewichtszunahme in der Malaria-Behandlung der progressiven Paralyse —*Klin Woch* 1926 July 16 Vol 5 No 29 pp 1319–1320

CHATTERJEE (S) Quinine Urticaria, and Absorption of Quinine in Malaria —*Indian Med Rec* 1926 June Vol 46 No 6 p 171

HESSE (E) Die Behandlung der Tabes mit Impfmalaria —*Med Klin* 1926 June 11 Vol 22 No 24 (1122) pp 920–921 [4 refs]

KERIM (Fahreddin) Die Paralyse und die prophylaktische Rolle der Malaria bei syphilitischen Erkrankungen des Nervensystems in der Turkei —*Wien Klin Woch* 1926 Aug 5 Vol 39 No 32 pp 915–918 [13 refs]

LJAHOWETSKY (A) To the Question on the Treatment of Malaria —*Russian Jl Trop Med* 1926 No 2 English summary p 56 [In Russian]

MALAGUETA (I) Therapeutica do impaludismo —*Arch Brasileiros de Med* 1926 May Vol 16 No 5 pp 195–209 [19 refs]

NICOLE (J Ernest) & STEEL (John P) Acquired Immunity to Malarial Inoculation —*Jl Mental Science* 1926 Jan Vol 72 No 296 pp 66–69

RUDOLF (G de M) Some Aspects of Therapeutic Malaria —*Proc Roy Soc Med* (Sect Trop Dis & Parasit) 1926 July Vol 19 No 9 pp 27–39 With 20 charts [14 refs]

LEPROSY.

AUDIBERT. La lèpre dans les colonies françaises, sa prophylaxie et son traitement. [**Leprosy in the French Colonies, its Prophylaxis and Treatment.**]—*Bull. Office Internat. d' Hyg. Publique.* 1926. May. Vol. 18. No. 5. pp. 521–543. [2 refs.]

. As the result of the Strasbourg Leprosy Conference an inquiry was made in all the French colonies regarding the incidence of leprosy. Treatment at dispensaries and domiciliary care, as well as separation of the children of lepers from their parents within 48 hours of birth were recommended, and the reports subsequently received from the various colonies are dealt with in this important communication. The incidence of the disease is summarized in the following table :—

Indo-China	30,000	Estimate,	5,454	segregated in villages
French Oceana	161		130	segregated in colonies
New-Caledonia	1,168			Partial village segregation
Martinique	50			Home and island isolation
French Guiana	550	Approximately.		Segregation of indigents
French West Africa	15,000	Estimate.		Partial village segregation
Togo	2,340	Estimate.		Partial village segregation
Camerouns	2,500	Estimate		Partial village segregation
Madagascar	6,000	Estimate	2,306	segregated
Réunion	114	Census	48	segregated
India	600	Estimate.	53	segregated
TOTAL	58,483			

Most of the information regarding prophylactic measures has been recorded in reviews of recent papers, so only the following points need be noted here. Efforts have been made to separate the children born to leper parents within 48 hours of birth, and this has been done to a considerable extent in Madagascar with the help of crèches and the employment of healthy foster mothers, and to some extent in other colonies by getting healthy relatives to take charge of the infants, but artificial feeding in the tropics among backward people usually results in the death of the children. The amount of segregation in the different colonies is indicated in the table · it has been found practicable only to a small extent mainly on account of its cost, rigid compulsion also leading to hiding of cases. Free treatment at dispensaries in place of isolation was tried in Indo-China and in India, but the results are reported to be very unsatisfactory owing to the patients disappearing in spite of threats to re-intern them.

Treatment —Very brief remarks on treatment show somewhat variable results, which are summarized in the statement that the cures are so far more apparent than real, and that chaulmoogra preparations have not yet produced anything comparable to the therapeutic miracle of arsenobenzol in syphilis. In Indo-China improvement of an inconstant nature was noted ; in Martinique improvement in 12 out of 20 cases treated ; in French Guiana " Dr. Henry à obtenu d'excellents resultants avec le gynocardate de soude," and with chaulmoogra ethyl esters improvement has been constant ; in Togo the last preparation and arsenic have given encouraging results with improvement in 200 cases treated with chaulmoogra and also in 85 cases given atoxyl ; in the Camerouns chaulmoogra and arsenical preparations have given good results, but they do not allow of indisputable cures being claimed ;

in Madagascar kermes mineral and eparseno-emetic gave no appreciable results. Ethyl ester chaulmoogrates have produced some improvement, but the trials are too recent to allow of a final opinion ; in Réunion chaulmoogra preparations gave definite improvement in the few patients submitting to the treatment ; and in India gynocardate of soda has been mainly used by subcutaneous injection twice a week and has given rapid improvement, with disappearance of the macules and return of sensibility, good results which favoured the success of the propaganda against the disease, but eparseno gave bad results and was given up. In none of the notes was the stage or duration of the cases mentioned, but presumably they were mostly fairly advanced ones, as there is no mention of any early cases being treated, so the above results may be considered promising, especially with gynocardate of soda, and as compared with those obtained only a decade ago.

L. Rogers.

DENNEY (O. E.) **The Leprosy Problem in the United States.**—*Public Health Rep.* 1926. May 14. Vol 41. No. 20 pp 923–929. With 11 figs on 4 plates. [2 refs.]

The present number of lepers in the United States is placed at a conservative estimate at 1,200, mostly in the Southern Gulf Coast States, and since sufficient accommodation, namely, for 425 patients, was provided at the Carville National Leprosarium in 1924 all known lepers have been sent there, where they have every comfort and attendance and are mostly well satisfied. The institution was described not long ago in this *Bulletin*, and is illustrated in the paper. Compulsory segregation is considered essential for stamping out leprosy, although unfortunately few countries but the United States can afford the high cost of the measure

L. R.

MILLARD (R. J.). **Leper Lazaret. Thirty-Fourth Report on Leprosy in New South Wales, for the year ended 31st December, 1924.**—*Rep. of Director-General of Pub. Health New South Wales for Year 1924.* pp 140–141.

This is the usual brief statistical report showing two admissions, two deaths and one discharged in good health with nerve thickening only and some cyanosis of hands and face, but negative bacteriologically , 16 remained at the end of the year, the cost of the institution being £3,096 19s. 3d., or £208 16s per patient per annum calculated on the average number resident, over half of which went in salaries.

L. R.

COCHRANE (Robert G.). **The Leprosy Campaign.** [Correspondence.] - *Lancet.* 1926. July 10. pp. 95–96. [5 refs]

The writer reports his experience during a 40,000 mile tour for the Mission to Lepers to investigate the present situation in the light of the new treatment, including some months at the largest leper institution in India, and visits to Burma, Siam, Borneo and the Philippines. He lays stress on the importance of hygiene, exercise and diet in the treatment, as advised by MUIR. In India the most successful treatment is by hydnocarpus oil or its ester mixed with creosote twice a week by infiltration under the skin lesions as advocated by the Calcutta School of Tropical Medicine, from 0·5 up to 13 cc. being the dose, and he concludes that by these means "in treating leprosy satisfactory results will accrue in the really early cases."

L. R.

NEFF (E. A.). **Leprosy in a Fourteen Months Old Child.**—*Jl. Trop. Med. & Hyg.* 1926. May 15. Vol. 29. No. 10. pp. 146–147.

In view of the comparative rarity of leprosy in children under five years this case is of interest as the child was born to an active advanced nodular leper, and owing to her delicate state of health was allowed to be nursed by her mother. She was about to be sent to her healthy father when a papulo-nodule was noticed in the centre of her left cheek, which must have been present at least three months in a less typical form, and numerous acid-fast bacilli were found in it; they were not found in the nasal mucus, in spite of several examinations, until four months later, when other nodules appeared on her face. Treatment by moogrol injected weekly checked the progress; the original nodule was absorbed, leaving a scar the size of a shilling, but the small nodules left very small scars. The case was bacteriologically negative after seven months and had remained so for several months at the time of reporting. A good example of successful treatment of an early case.

L. R.

DORE (S. E.). **Nodular Leprosy previously shown.**—*Proc. Roy. Soc. Med.* (Sect. of Dermat.) 1926. June. Vol. 19. No. 8. pp. 52–55. With 4 figs. [1 ref.]

This is a report on a case with typical nodular leprosy shown in October 1924 in a boy who was first seen eighteen months after the appearance of the disease (see this *Bulletin*, Vol. 22, p. 216). He was treated with injections of E.C.C.O. and moogrol and sodium gynocardate pills, but the dose of the first could not be increased as it made him ill, and he could not take chaulmoogra oil; sodium gynocardate intravenously (the most active form of treatment) could not be tried as his mother would not allow him to go to hospital. An autovaccine made from one of his nodules was also tried, but all failed and he has got steadily worse; a good example of the failure of the less active preparations in a case not treated early.

L. R.

HUDELO, MOUZON & DUHAMEL. Sur un cas de lèpre nerveuse avec tremblement et symptômes de la série spasmodique (lèpre à forme mixte d'emblée). **[Case of Nerve Leprosy with Tremor and Spasms.]** —*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1926. June 17. Year 42. 3rd Ser. Vol. 50. No. 21. pp. 971–975.

This case showed the very rare symptoms of tremor of the extremities and exaggerated reflexes and clonus, and was discussed by M. JEANSELME, who had not seen a similar case.

L. R.

ESCARTEFIGUE (Jean). Fréquence dans les troupes noires des cas de lèpre sans bacilles décelables. (A propos des cas observés à l'Hôpital Sainte-Anne de Toulon.) [**Frequency in Black Troops of Cases of Leprosy without Discoverable Bacilli.**]—*Jl. Méd. de Bordeaux.* 1926. May 10. Vol. 103. No. 9. pp. 367–376.

Among the black troops recruited in the African and West Indian colonies of France, with about 48 million people, cases of leprosy are not infrequently found, as when the men are collected in remote villages it is not possible to submit them on the spot to expert medical examination. At least 1 per cent. are subsequently found to be lepers, and many have been met with in the Toulon naval hospital. The diagnosis of leprosy on the usual lines is discussed at length, and the interesting point is brought out that among the comparatively early cases met with in the recruits, 9 out of 14 cases carefully examined in the laboratory did not show any lepra bacilli in their early skin lesions, although the clinical signs were quite distinct. In the absence of any diagnostic value of the Wassermann or other serum test, these must be relied on in making the diagnosis.

L. R.

PINEDA (Eloy V.) & ROXAS-PINEDA (Elisa). **Studies on the Serology of Leprosy. I. The Wassermann Reaction in Leprosy.**—*Philippine Jl. Sci.* 1926 May. Vol. 30. No. 1. pp. 39–57. [21 refs.]

This is an important paper as it deals with a large number of cases and the technique was good. It confirms the recent work of KOLMER and DENNY, who obtained uniformly negative results in non-syphilitic leprosy cases with KOLMER's new standardized technique, which is admitted to be superior in the diagnosis of syphilis. The Philippine workers now report on 500 leper sera examined by Kolmer's method, about 150 of which were also tested by an ordinary method using both plain and cholesterinized antigens. The total cases included 66 untreated and 59 cases negative bacteriologically after treatment, as well as 82 cases tested during lepra reactions. Of the 500 cases 85, or 17 per cent., gave reactions positive in some degree, the doubtful plus-minus reactions being included, and of these 58 were in a group of 67 under suspicion of yaws (42 cases) or syphilis (25 cases). The remaining 27 gave a history of neither, and it is very interesting to note that 11 of these 27 were among those showing lepra reactions when tested, 8 of them giving strong Wassermann reactions, although only 1 of the remaining 16 positive cases showed a strong reaction, and the remaining 15 with weak reactions were probably due to serum changes of leprosy. They therefore conclude that with such refined technique as that of KOLMER the Wassermann reaction is negative in uncomplicated cases of leprosy in the ordinary non-reacting phase, so that when strongly positive it indicates some such complication as yaws or syphilis.

L. R.

BALBI (E.). La reazione di Wassermann dei parenti e famigliari dei lebbrosi (nota preventiva). [**The Wassermann in the Relatives and Associates of Lepers.**]—*Giorn. Ital. di Dermat. e Sifil.* 1926. Apr. Year 61. Vol. 67. No. 2. pp. 614–617. [2 refs.]

The author examined the sera of 43 persons, using leproma extract as antigen, and found four positive ; a girl of 16 years, without symptoms, the daughter of a leper of 30 years' duration , the mother of a leprous male, ill with the disease in nodular form for 3 years , two sisters of the last-mentioned This investigation was completed before the author had seen the work of MUIR, LLOYD and MITRA on the Wassermann reaction in 104 children of leprous parents

H Harold Scott

WADE (H W) **Studies on the Serology of Leprosy. II. Nitric Acid Precipitation (Bruck, modified).**—*Philippine Jl Sci* 1926 May Vol 30 No 1 pp 59–67 [15 refs]

In view of negative Wassermann reactions in uncomplicated leprosy with improved technique, it is important to investigate the serum changes in this disease to try to find a diagnostic method so Bruck's reaction consisting of a rough determination of excessive globulin precipitation by nitric acid in dilute serum has been tried in 100 leprosy cases with 16 controls 93 leper s sera gave strong to moderate reactions and none were negative, but strong reactions were only met with in 7 per cent of treated to 44 per cent in untreated ones and a similar low proportion was found in 10 bacteriologically negative cases As only 3 of the 16 healthy non-leper controls gave negative reactions mostly slight ones the method is of no diagnostic value, although the number of strong reactions in lepers points t some alterations in their sera requiring further investigation

I R

SCHOBL (Otto) & RAMIREZ (Jose) **Serological Analysis of Leper's Sera.**—*Philippine Jl Sci* 1926 Mar Vol 29 No [illegible] pp 305-326 [4 refs]

In view of the contradictory statements in the serological literature of leprosy the writers have investigated certain aspects of the question in 92 lepers They have found no distinct quantitative differences in the content of natural haemolysins and complement in the sera of lepers and of healthy controls and the keeping properties as shown by the rate of decrease of complement were also the same

I R

RAEVSKY (A) & BRAOLL (J) À la sérologie de la lepre [**Serology of Leprosy.**]—*Rev Microbiol et Epidemiol* 1926 Vol 5 No 3 French summary p 231 [In Russian pp 139–142 9 refs]

All acid-fast bacilli give serum reactions in common, so the authors have examined the sera of 93 lepers for reactions with the antibodies of tubercle bacilli In 44 active nodular cases they found strongly positive reactions in 10, positive in 17, weakly so in 12 and nil in 5 cases and in inactive and latent cases and early nodular cases they got 2 strong, 7 positive and 20 negative reactions, while in nerve cases only two were weakly positive, and in 9 cases practically cured only 2 gave feeble reactions The reaction was negative at the commencement of the disease, after cure and in very grave complicated cases, so the sedimentation reaction of Darangi has some value in estimatng the activity or otherwise of the disease

L R

PARAS (Ernesto M) **Blood-Chemistry Studies in Leprosy. I. Nonprotein Nitrogenous Substances, Sugar, and Chloride.**—*Philippine Jl Sci.* 1926 June. Vol 30. No. 2 pp 219–234 [10 refs]

Little work has yet been done on the chemistry of the blood in leprosy, and this paper deals with the subject in 100 lepers and 17 healthy controls, with the result of coming to the following conclusions —

"1 The methods and results of the chemical analysis of blood in 100 lepers and in 17 presumably normal individuals are reported The lepers were classified in the following groups those without complications, those with miscellaneous complications, those with tuberculosis, those with lepra reactions and those with nephritis

2 The blood values taken as normal for the various constituents were as follows Nonprotein nitrogen, 23 to 33 milligrams, urea nitrogen, 7 to 19 milligrams uric acid, 2 6 to 4 4 milligrams preformed creatinine 1 to 1 5 milligrams sugar, 80 to 160 milligrams, chlorides, calculated as sodium chloride, 0 42 to 0 49 per cent All figures were calculated as per 100 cubic centimeters of whole blood

"3 The results obtained from normal individuals are compared with those obtained by other investigational workers

'4 A study of the results collected brings out the following facts

' (*a*) No regular correspondence can be traced between the blood findings and the duration extent or type of leprosy or the antileprosy treatment

" (*b*) The average values for nonprotein nitrogen uric acid, creatinine, and sugar for all of the leper groups were somewhat high, although many individual cases showed normal values

' (*c*) The average values for nonprotein nitrogen and urea nitrogen are markedly high, not only in the group of lepers with nephritis but also in the group with lepra reactions

(*d*) The group averages for urea nitrogen are normal except as above stated and those for chloride are normal throughout '

I R

CONCEPCION (Isabelo) & SALCEDO, Jr, (Juan) **The Calcium Content of Blood in Leprosy.**—*Jl Philippine Islands Med Assoc* 1926 May Vol 6 No 5 pp 154–157 [9 refs]

As READ has found that injections of ethyl hydnocarpate in dogs altered the amount of calcium in the blood, the writers have estimated the calcium in the whole blood of lepers by Halverson and Bergeim's method and found it to be within the normal limits in all cases except paroled and suspect cases The average amount was much less in those of under a year's duration than in those of longer standing but no marked difference was found in the two main types of leprosy The slight increase in the calcium content in cases that have recovered and been paroled was not due to the ethyl ester injections

L R

ANTUNES (Altino) Pesquisa dos bacillos de Hansen nas manchas [**Search for Lepra Bacilli in Maculae.**]—*Brazil-Medico* 1926. May 29 Year 40 Vol 1 No 22 pp 285–286

To obtain material, the author makes a linear incision at the edge of a macula, presses the lips of the wound to prevent excess of blood-flow, and then scrapes off a little of the tissue in the depth of the cutis, smears it on a slide, and stains it by the Ziehl-Neelsen method, differentiating with 1 per cent. acid-alcohol. He found the bacilli in 21 out of 39 cases and suspects examined, but states quite candidly that in 8 cases of obvious disease, he failed to find them in this way.

H. Harold Scott.

BARGEHR (P.). Zur Epidemiologie der Lepra. [**Epidemiology of Leprosy.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1926. Vol. 66. No. 2. pp. 188–194. [In German.]

Bargehr's experience as a medical officer in charge of the Leprosy Asylum Plantoengan (Java) leads him to certain conclusions, which he summarizes as follows :

(1) The spread of leprosy is not intimately connected with bad social circumstances.

(2) The disposition to leprosy is not a general one.

(3) It can be raised by an hereditary factor.

(4) It is subject to a marked endemic influence of unknown origin, which may decrease or increase in the course of time.

W. J. Bais.

POPOFF (P. P.). Sur le rôle des insectes dans la propagation de la lèpre. [**The Rôle of Insects in the Spread of Leprosy.**]—*Oeuvres de l'Inst. Tropicale de l'Armenie.* 1926. Vol. 1. French summary pp. 7–8. [In Russian.]

The writer has studied lepers in their homes in Armenia, and in the Erivan hospital, and examined 158 insects found in the leper's hall. One *Cimex lectularius* only contained acid-fast bacilli, but he thinks insects may play a part in the propagation of the disease.

L. R.

GENEVRAY (J.). Essais de traitement de la lèpre par les éthyl-éthers de l'huile de chaulmoogra et l'éparséno. [**Treatment of Leprosy by Ethyl Esters of Chaulmoogra Oil and Eparseno.**]—*Bull. Soc. Path. Exot.* 1926. June 9. Vol. 19. No. 6. pp. 441–462.

This is a report on a careful trial of treatments of leprosy on a large scale over a period of three years in the Leprosarium of New Caledonia with 130 lepers, of whom 115 are Europeans. The first part deals with the use of chaulmoogra ethyl esters, prepared by Poulenc under the name of " Hyrganol ", which causes little pain on injection. The cases were quite unselected, but mostly well advanced in the disease and a number of many years duration. 70 patients were treated by this preparation; at first only 10 volunteered for it, but the others came forward after seeing improvement in the first few. No serious reactions were met with, and only 7 easily cured abscesses in over 5,000 injections. Improvement was noted firstly in the disappearance of macules, then in the decrease or disappearance of nodules, regrowth of hair if not lost for very long, rapid diminution of, and cessation of epistaxis, and improvement in sensation with lessening or disappearance of thickening of the nerves and healing of ulcers ; the general health also improved distinctly, and in some cases clincal cure, that is disappearance of all symptoms and of lepra bacilli resulted. The action of the drug on the bacilli was investigated in nine cases by counting the proportions of rods and of broken down or granular organisms in removed portions of tissue before and after treatment, and in all of them great reduction in the percentage of well staining rods or even their complete disappearance was noted, at the same time that clinical improvement took place, so they agree with earlier workers in considering that the lepra bacilli become destroyed in the tissues. He summarizes the results in the 70 cases as follows :—

Cured (clinically)	6	8·75%	40%	
Nearly cured	12	17·14%		51%
Much improved	10	14·28%		
Slightly improved	8	11·42%		
Stationary	34	48·57%		

Young persons not long affected did best, but cases of 4 to 12 years' duration also did well sometimes He points out that it is not surprising that very advanced nodular, nervous or mixed cases, some of 30 years' duration, and with a mean of 10 to 15 years, have shown no appreciable results, but on comparing such cases with untreated ones it was noted that the disease had been arrested by the drug He concludes that, although the treatment cannot be considered a specific cure for leprosy and long-sustained severe cases showed no improvement, in moderately advanced cases the improvement has been partial, and in recent and milder cases, especially in the young, the clinical and bacteriological improvement has been quite clear and sometimes progressed to apparent cure ; the treatment thus constitutes a real therapeutic progress by its action on both the lesions and the bacilli, and also a prophylactic weapon of the first importance.

A trial of eparseno (amino-arseno-phenol) was made in 31 cases, using the moderate doses recommended by GOUGEROT These were painful and caused induration, increased the pigmentation and sometimes caused severe reactions, and in two alcoholic patients fatal results were considered to have resulted from the injections, so that the treatment requires very close medical supervision, although many stood it well. A table of the results shows great improvement in one only, one slightly improved, 25 unchanged, and 3 worse, 1 of whom died a year later and 2 died from the treatment He concludes that the drug has no specific action in leprosy, and that it has no curative value comparable with that of the ethyl-esters of chaulmoogra oil.

L R

BALBI (E) Sulla cura della lebbra con i chaulmoograti sodici. [**Treatment of Leprosy by Sodium Gynocardate.**—*Giorn. Ital. di Dermat e Sifil.* 1926 Apr Year 61 Vol 67 pp 623–629. [14 refs]

Five cases of leprosy are recorded in which, after various forms of treatment had been adopted in vain, injections of sodium gynocardaté were given The first was a woman of 52 years, with nodular leprosy of six years duration. Treatment was continued for six months, and 12 gm were used in all (8 intravenously, 4 subcutaneously) and 20 cc. of sodium morrhuate. There was marked improvement, but after 37 injections intolerance occurred of such a degree that treatment had to be suspended The second patient was a man of 44 years, who had suffered for 16 years from mixed leprosy. He had 17 gm. of the drug (15 intravenously and 2 subcutaneously) and 25 cc. of sodium morrhuate in the course of eight months. Improvement was striking, some nodules disappeared, the remainder diminished in size, and the ulcers healed The other three patients were treated for three months only, and the improvement, though it occurred, was considerably less than in either of the other two The drug had no effect on the Wassermann reaction, which was positive in all five patients

H Harold Scott

WILSON (R M) **Treatment of Leprosy.**—*Southern Med Jl* 1926 Aug Vol 19 No 8 pp 603–604

The writer in Korea, who has had several years experience of the improved leprosy treatment on a large scale reports further favourable results, for after eliminating 24 deaths and 15 with tuberculous complications, 90 per cent of all cases showed improvement 300 cases had weekly injections of 4 to 8 cc of chaulmoogra oil (hypocardnia) with 1 per cent of camphor, according to MUIR's plan, which prevents pain and another 200 had injections for two or three years and then took the oil by the mouth , these remained in good health and can be discharged Of 75 cases discharged about 18 months ago, only about five had shown a return of the condition and these few recurrences were probably due to lack of good food and proper attention Further, at the Fusan colony under his direction 375 cases are having the ethyl-esters ' and 62 per cent of these report improvement and 52 per cent report that they are leading an active life and able to work In our place at Kwanju, 72 per cent have the disease so arrested that they can lead an active life and take part in the farm and other work about the place " Formerly the ethyl-esters caused so much pain that the lepers then treated by it have refused injections since, but Dr READ, of Pekin, now reports having made a preparation which is not painful, and it is being tried in a few cases with one per cent camphor Work is good for the patients, and no one but lepers are now employed about the colony, the lepers doing everything for themselves, including carpentry, which helps to prevent stiff joints and atrophy of muscles, massage often helping

L R

PARRA (Ricardo J) Tratamientos de la lepra en Agua de Dios [**The Treatment of Leprosy in Agua de Dios.**]—*Repert de Med y Cirug* Bogota 1926 Feb Vol 17 No 5 (197) pp 260–266, and in *Gac Med de Caracas* 1926 May 31 Vol 33 No 10 pp 156–158

All the forms of treatment recommended for this disease have been tried from time to time in Agua de Dios, namely atoxyl, chaulmoogra oil and its ethyl esters, arsenobenzol, nastin, gynocardate of sodium, leprolisina Dávila, eparseno, and antimonial compounds.

Later, four patients were treated with E C C O (Ethyl esters of the fatty acids of *Hydnocarpus Wightiana*, 1 cc , Camphor 1 gm ; Creosote 1 cc , Olive Oil 2·5 cc) Details of these are given, and the results may be summed up by saying that the local effects were less marked than with other preparations, but the results generally were no better than with the pure esters or the oil of chaulmoogra itself, whether taken by mouth or by injection

Lastly, sodium morrhuate has been employed by subcutaneous injection of a 3 per cent strength in two cases. One patient improved clinically, but up to a certain point only, the other could not tolerate doses higher than 2 cc, and the condition remained stationary The former received, in all, 69 injections and a total of 175 5 cc, the second had 47 injections, and 93 cc altogether

H Harold Scott

DE PARREIRAS HORTA Traitement de la lepre et de quelques dermatoses par l huile de *Carpotroche braziliensis* [**Treatment of Leprosy by the Oil of** *C braziliensis*]—*Bull Soc Française de Dermat et de Syph* 1926 Apr No 4 pp 365–367

Carpotroche braziliensis is one of the Flacourtiaceæ, the natural order which includes Hydnocarpus, so Professor DEL VECCHIO of Rio de Janeiro has prepared an ethyl ester of the oil extracted from its seed which the author since 1921 has used either pure or with chaulmoogra oil in the treatment of leprosy He has gained the impression that it has a very favourable action in the disease, it is only slightly irritant to the tissues and is well tolerated mixed with oil of camphor or oil of chaulmoogra up to 5 cc doses intramuscularly Two cases have shown improvement which he admits is not sufficient to allow of a decided opinion being given on its value He also tried in two cases, without any benefit a combination of the oil with copper The oil is also an active parasiticide when applied to the skin in sycosis, etc

L R

SEABRA (Paulo) A chaulmoogra brasileira [**A Brazilian Chaulmoogra.**—*Brazil-Medico* 1926 May 15 Year 40 Vol 1 No 20 pp 268 270 [1 ref]

The author gives a general account of a plant *Carpotroche brasiliensis*, which from its constituent oil and its action is also known as Brazilian Chaulmoogra The oil has a greater dextro-rotatory power than that of *Taraktogenus kurzii* 53 4 as against 48 A copper salt of the fatty acids was obtained but injection of it caused great pain and at times local necrosis As a result of further experiments a colloidal product was prepared which was named Karpotran a physiohydrosol of cupric carpotrochate Improvement of symptoms of leprosy follows its use without any unfavourable consequences but whether it is really superior to chaulmoogra in the long run has yet to be established

H Harold Scott

MUIR (L) **External Medication in Leprosy.**—*Indian Med Gaz* 1926 May Vol 61 No 5 pp 215 219 With 9 text figs

This paper deals with the applications of caustics and use of surgical measures in leprosy The best method of producing counter-irritation is by applying trichloracetic acid in a strength of 1 to 1 of water over the centre of large thick nodules, 1 in 3 for general use on skin lesions and 1 in 5 for lesions on the face The solution is painted over the lesions with cotton wool on a glass rod or piece of wood, such as a match, until a white appearance is left on drying, and repeated every 10th day, one third of the lesions being dealt with at a sitting when the injections are being given twice a week Illustrations of the effects are given The surgical measures advised are the removal of early nodules with local anaethesia when only one or two are present, trimming of the auricle of the ear when much thickened, heat by the application of a curved clamp and cutting off the projecting part and covering with dry cotton wool, the method and results being illustrated; and in the case of greatly thickened nerves or abscesses in them an incision of three or four inches will enable the nerve and its sheath to be freed from surrounding tissue or any abscess opened, which relieves severe pain at once, reduces the size of the nerve and restores some of its function.

L. R.

MUIR (E.). **Some Fallacies connected with the Testing of Drugs for their Efficacy in the Treatment of Leprosy.**—*Indian Jl. Med. Res.* 1926. July. Vol. 14. No. 1. pp. 125–128.

The writer draws attention to the following fallacies in leprosy treatment: (1) Patients not rarely come in an acute reactionary phase with the appearance of new lesions, which tend naturally to subside to a considerable extent without treatment, so this occurrence should not be attributed to any drug in use at the time. (2) The not infrequent presence of syphilis in leprosy patients in India leads to improvement after arsenical preparations due to their action in removing an important predisposing cause of leprosy being mistaken for an action on the leprosy itself. (3) The good local effects of counter-irritation over leprous lesions leads to innumerable drugs acting in this way being thought to have a specific action on the general disease. (4) Due to not distinguishing between permanent and temporary lesions, the failure to remove the former being allowed to discredit a drug, although "it is as absurd to expect many of these permanent lesions to disappear under treatment as it would be to expect the disappearance of pock-marks in those who have suffered many years ago from small-pox." "Patches which are bacteriologically negative, have no raised or spreading margin, and show no increase in size over a period of two years may be considered permanent."

L. R.

DEVOTO (A.). Tentativi di cura della lebbra con vaccini preparati coi noduli leprosi (nota preventiva). [**The Cure of Leprosy by Means of Vaccines made from Leprous Nodules.**]—*Giorn. Ital. di Dermat. e Sifil.* 1926. Apr. Year 61. Vol. 67. No. 2. pp. 618–623.

The author reviews the previous records of attempts to treat leprosy by vaccines on the part of ROST, WILLIAMS, ZIRONI, WINKELRIED, and others, showing how contradictory the results have been. He then details three cases in which he used PORCELLI'S method of injecting an autovaccine obtained by triturating nodules and treating them with antiformin, which dissolves away much of the tissue, sets free the bacilli, and has an detoxicating action on the extract. The preparation is finally standardized to contain 500 million bacilli per cc. and is sterilized by heating to 60° C. for 30 minutes and the addition of 0·5 per cent. phenol.

The three patients were men of 51, 29, and 28 years of age respectively, with mixed leprosy of many years' duration, which had resisted all previous forms of treatment. Injections increasing from 1 to 4 cc. were given on alternate days. The first had 7 injections, and the symptoms rapidly ameliorated; repeated examinations showed that the bacilli had almost disappeared. The second had 20 injections increasing to 5 cc. for the last. The nodules disappeared and bacilli were no longer discoverable. The third was given 6 injections. There was no obvious change in the appearance of the lesions, but the bacilli, which had been very numerous in the nasal mucus, rapidly and progressively diminished in number.

H. Harold Scott.

AIQUIER (A.) & CHALON (G.). Un cas de lepre d'origine soudanaise observé à El Golea (Oasis sahariennes). —*Arch. Inst. Pasteur d'Algérie.* 1925. Sept. Vol. 3. No. 3. pp. 293–297. With 1 plate and 2 text figs. [1 ref.]

BOURNE (C. R.). Leprosy in Montreal. Report of a Case.—*Canadian Med. Assoc. Jl.* 1926. Apr. Vol. 16. No. 4. pp. 395–398. With 5 text figs. [2 refs.]

CHATELLIER (J.) & LAURENTIER (Ch.). Sur un cas de lepre à Toulouse. —*Bull. Soc. Française Dermat. et Syph.* 1926. Feb. No. 2. pp. 134–135.

DELAMARE (G.). Tuberculoide atypique de la lepre et microfilariose. —*Progrès Med.* 1926. Jan. 23. No. 4. pp. 119–121. [5 refs.]

HOFFMANN (W. H.). El problema de la lepra bajo los aspectos modernos. [Modern Aspects of the Leprosy Problem.]—*Rev. Med. y Cirug.* Habana. 1926. Feb. 25. Vol. 31. pp. 119–124.

LITTLE (E. G. Graham). Case of Acute Nodular Leprosy.—*Proc. Roy. Soc. Med.* (Sect. of Dermat.) 1926. Aug. Vol. 19. No. 10. pp. 65–66.

RAEVSKY (A. S.). The Forgotten Infection of the South East of USSR. (Leprosy.)—*Rev. Microbiol. et Epidémiol.* 1926. Vol. 5. No. 3. English summary pp. 230–231. [In Russian pp. 137–138.]

TROPICAL DERMATOLOGY.

LANGERON (M.) Travaux récents sur la classification des dermatophytes. [**Recent Works on the Classification of the Dermatophytes.**]—*Ann. Parasit. Humaine et Comparée.* 1926. Apr. Vol. 4 No. 2. pp. 193–198. [7 refs.]

Since SABOURAUD'S work the classification of the Dermatophytes seems stabilized. His classification, although very convenient from a practical and a clinical point of view, is not botanical, and the position of the apparently homogeneous group of Dermatophytes among the other groups of Hyphomycetes is not apparent. Further, the abundance of newly described forms renders the old genera too large and indefinite. In consequence of this, Langeron and OTA recently attempted a truly botanical classification of the Dermatophytes, which has aroused much opposition. Similarly, VUILLEMIN was led to introduce a new classification of the Arthrospores, which upsets his old arrangement of the classes of Conidiospores. The "aleuric" form of spore no longer characterizes an order but only a tribe, that of the Aleurismeae. Thus, an important and well marked group of Hyphomycetes, for the mere fact of possessing arthrospores, is transferred from the Conidiospores to the Arthrospores and is reduced in rank from that of an order to a tribe. In this re-arrangement, the Dermatophytes, which were placed among the Conidiospores, are nearly all placed in the Arthrospores and are mostly united with those Mycodermas for which other than mycelial spores are hardly known. It is hard to see why Dermatophytes possessing "spindles" are united with Fusoma where the mycelium is exceedingly reduced, rather than with Blastotrichum, which Langeron and OTA have shown to be much more closely related to the Dermatophytes. He also favours the retention of the so-called "medical genera" in favour of truly botanical genera.

GRIGORAKI'S classification is objected to on the grounds that it is based on the old theory of MATRUCHOT and DASSONVILLE that the Dermatophytes are Gymnoascaceae that have lost their perithecium, which rests on the one doubtful case of *Eidamella spinosa*. Apart from the genus *Ateleothylax*, which all place in the Gymnoascaceae, he divides the Dermatophytes into two unequal parts: one, the family Atelogymnoascaceae, joined to the Gymnoascaceae, contains the new genera *Spiralia*, *Closterosporia*, *Closteroaleurosporia*, *Chlamydoaleurosporia* and *Aleurosporia*; the other contains the one genus *Arthrosporia* and is placed in the Arthrospores. These new names violate articles 44 and 45 of the International Code of Nomenclature; of which article 38 is also violated as the type species of the new genera are not indicated. Further, the new genera proposed by Langeron and OTA recur nearly intact with new names. Closteroaleurosporia corresponds to Sabouraudites; Aleurosporia contains only Trichophyton "sensu stricto." Spiralia exactly corresponds to their sub-genus Aleurocloster (Sabouraudites), while the genus Arthrosporia unites Endodermophyton, Bodinia and Grubyella which they separated.

P. Tate.

MEDINA JIMÉNEZ (Rafael). Las afecciones micosicas en Venezuela. [**Mycotic Affections in Venezuela.**]—*Gac. Med. de Caracas.* 1926. Mar. 15. Vol. 33. No. 5. pp. 69–76. With 12 text figs.

In this paper the author makes brief remarks on the many forms of mycotic affections which he has met with in Venezuela. The following are dealt with shortly actinomycosis, trichophyton, mycetoma, sporotrichosis and bronchomoniliasis, while the major part of the paper treats in greater detail of certain skin affections classed together under the name *Carate* This is very widespread, its main focus being the Zamora plains at the foot of the Cordilleras, it also occurs on the banks of the Apure Arauca, the upper Orinoco, and to a less degree in Mérida and Trujillo Various moulds have been cultivated from the scales taken from patients suffering from these affections—Aspergillus, Penicillium Trichophyton etc Also a mould with short, broken hyphal filaments and spores of various size classed as a Malassiezia, and producing coloured dermatomycoses red, brown purple blue and black, and some white The author is of the opinion that the colour depends somewhat on that of the skin of the patient, in whites, it is often brown blue or black, but in the dark skins of a grey or ashy colour The red variety has been seen only in the white races One form does not confer immunity to others for a case is recorded in which there was a blue form on the face and an ashy or mottled form on the body generally

Photographs, not very well reproduced are given to illustrate some of these conditions

H Harold Scott

KATÔ (Yutaka) Note sommaire sur les trichophyties dans les provinces de Kiushiu et dans les îles de Liukiu et sur deux espèces nouvelles de Dermatophytes *Trichophyton coccineum* et *Bodinia spadix* n sp [**Trichophytosis in Kiushiu and the Liukiu Islands. Two New Species of Dermatophytes.**]— *Japan Jl Dermat & Urol* 1926 Apr Vol 26 No 4 French summary pp 11–17 With 22 figs on 4 plates [In Japanese pp 306–358 With 21 text figs 55 refs]

In all, 184 cultures were obtained comprising the following species—*Bodinia violacea* [Bodin 1902], from 14 cases of superficial tinea, 3 of deep-seated tinea and 1 of herpes circinata *Bodinia glabra* [Sab 1909], a species rather rare in Europe was found rather frequently being isolated from 39 cases of superficial tinea, 4 of deep-seated tinea, and four of herpes circinata *Grubyella ferruginea* [Ota 1922] is the chief cause of tinea of the scalp and was found in 48 cases of superficial tinea, 7 of deep-seated tinea, and 9 of herpes circinata *Trichophyton pedis* [Ota 1922], from 1 case of " eczema marginatum " [dhobie itch] 1 of dysidrosis, and 2 of onchomycosis *Sabouraudites asteroides* [Sab. 1909], from 3 cases of herpes circinata, 2 of eczema marginatum, 1 of dysidrosis, and 2 of onchomycosis *Sabouraudites interdigitalis* [Priestley 1917], from 3 cases of dysidrosis *Sabouraudites ruber* [Castellani 1909] is the chief cause of eczema marginatum, being found in 15 cases, and also in 2 cases of superficial tinea, 1 of herpes circinata, 4 of dysidrosis and 5 of onchomycosis *Epidermophyton cruris* [Castellani 1905], from 1 case of herpes circinata and 1 of dysidrosis Two new species, *Trichophyton coccineum* n sp and *Bodinia spadix* n sp were also found

Trichophyton coccineum n sp was obtained from 5 cases of superficial tinea, 3 of herpes circinata, 1 of dysidrosis and 1 onchomycosis It was found in all parts of Kiushiu that were studied It is a true " endothrix " form, and in the hairs forms long chains of spherical, ellipsoidal or cubical spores 4–7 microns wide In nails it sometimes forms fine hyphae 3–4 microns wide, and sometimes chains of relatively short cells 5–6 microns wide Cultures are most characteristic at about three weeks old, when they form discs 6–7 cms in diameter There is a large central area covered with a reddish down and with a central depression from which furrows radiate Outside this, there is an immersed area deep purple in colour with scattered powdery patches, and a peripheral immersed ring, pale cream in colour when seen through the medium The mycelium is fine and racket-shaped hyphae are common Aleuriospores are borne on simple or branched hyphae, and chlamydospores remarkable for their large size and irregular shape, occur terminally on lateral hyphae or in chains Inoculation of the hairy skin of a child was positive after 35 days Inoculation of guineapigs rabbits and dogs was also positive but with these animals it behaved as a pure ectothrix

Bodinia spadix n sp was found once in the case of a child with superficial ringworm The clinical aspect resembles that caused by *Bodinia violacea* It behaves as a large spored endothrix Cultures on glucose agar are most characteristic in about three weeks, when they form thin discs scarcely to be distinguished from the medium except by the colour and the extremely fine furrows radiating from the centre There is a grey pleomorphic down The mycelium is fine about 3 microns wide sparsely septate and develops racket-shaped hyphae, mycelial spores and terminal and intercalary chlamydospores Inoculation was positive with guineapigs rabbits dogs and cats the latter being the most susceptible

P Tate

WACHOWIAK (M) & FLEISHER (Moyer S) **Epidermomycosis of the Sole caused by Monilia and Yeast.**—*Arch Dermat & Syph* 1926 June Vol 13 No 6 pp 815 818 2 refs

Report concerning two male cases with circumscribed superficial vesicular lesions on the soles resembling those of an epidermomycotic infection Cultural investigations, described in detail revealed from the one case a yeast-like organism to be classed possibly as Cryptococcus, while the other showed a Monilia

W Jenkins Oliver

DOHI (K), TAKAHASHI (Sh) & SUZUKI (S) Ueber den vierten Fall von Mycetoma pedis in Japan [Abstract] [**The Fourth Case of Mycetoma Pedis in Japan.**]—*Japan Jl Dermat & Urol* 1925 Oct Vol 25 No 10 pp 97–99 With 5 figs on 2 plates [In Japanese pp 803–827 With 9 text figs 17 refs]

This case of Mycetoma pedis involved the left foot of a peasant aged 43 years from the neighbourhood of Tokio The first eruption had appeared four years previously, and when observed, the whole foot was greatly swollen, and reddish, soft solid tubercles varying in size from that of a rice grain to that of a bean were present on the diseased area Yellowish pus containing similarly coloured grains could be expressed from the tubercles The bones were not attacked The grains formed of closely interwoven masses of thin, non-segmented hyphae, were roundish, kidney-, horseshoe- or ring-shaped, and in section showed a central zone, a deeply coloured compact zone, and a peripheral zone of fine threads Treatment not proving effective, amputation was performed. Cultures of an organism closely resembling *Nocardia bovis* [*Discomyces bovis* Harz, 1877] were obtained.

The organism grows readily on ordinary media both liquid and solid, either aerobically or anaerobically, but growth is better under aerobic conditions. Gelatine is liquefied and on certain media (e.g. Sabouraud's sugar agar) a characteristic scent and a dark brown pigment are developed. The mycelium, which is Gram positive and slightly acid fast, consists of long, branched, nonsegmented hyphae 0·3–0·7 microns wide, by the fragmentation of which chains of roundish spores of a similar diameter are produced. On media containing sugar or glycerine there is a tendency for terminal or intercalary enlargements to be formed. It is very resistant to heat and cold. Mention is made of the toxic effect of various organic and inorganic poisons and organic dyes on the growth of the organism in bouillon cultures. Animal inoculation was negative.

P. Tate.

REENSTIERNA (J.). Reproduction expérimentale du mycétome chez le lapin. [**Experimental Mycetoma in the Rabbit.**]—*Arch. Inst. Pasteur de Tunis.* 1926. June. Vol. 15. No. 2. pp. 101–107. With 4 figs on 1 plate. [9 refs.]

By inserting a thread impregnated with a culture of *Nocardia madurae* (Burnet & Broc) [*Discomyces madurae* Vincent 1894] in the right testicle of a rabbit, a normal thread being inserted in the left testicle as a control, the development of a small nodule about the size of a pea was incited. This contained hyphae and sclerotia, and when inoculated on Sabouraud's medium gave a slight fungous growth on one tube, which could not be sub-cultured. Four rabbits were inoculated with a portion of the nodule, and one, inoculated in the testicle, developed a small nodule, which contained a few degenerating hyphae; but cultures, and re-inoculation of rabbits failed.

P. Tate.

PALMER (F. J.). **A Case of Madura Foot treated by Chemotherapy. Apparent Cure.**—*Indian Med. Gaz.* 1926. Feb. Vol. 61. No. 2. p. 74.

Concerns an elderly Indian, a chronic leper, with a condition of the right ankle region diagnosed as Madura foot. Healing of the foot lesions followed the treatment, spread over seven months, consisting of 9 intravenous injections of bismuth sodium tartrate (grains 2½–4), intermingled with 4 intravenous injections of copper citrate (grains 2½) plus 1 grain pills of this latter drug in 5 ten day courses.

W. J. O.

BURNET (Et.) & BRUN (G.). XVIIe observations tunisienne de mycétome. [**17th Observation of Mycetoma in Tunis.**]—*Arch. Inst. Pasteur de Tunis.* 1926. June. Vol. 15. No. 2. pp. 151–153. With 1 text fig.

Case report concerning a native, aged 28 years, in whom the condition affecting the left foot was of 7 years' duration. The foot was swollen to double the normal size, shapeless and covered with numerous small vesicular nodules. The corresponding inguinal glands were enlarged. Radiological examination showed severe lesions of the tarsal bones. The particular infecting fungus is not described. Amputation at the lower third of the limb was performed.

W. J. O.

MANGABEIRA-ALBERNAZ (P.). L'ulcère phagédénique tropical et son traitement par les insufflations de bismuth. [**Tropical Ulcer and its Treatment by Insufflations of Bismuth.**]—*Bull. Soc. Path. Exot* 1926. Feb. 10. Vol. 19 No 2. pp. 115-127. [67 refs.]

The local application of pure acid potassium tartrobismuthate and of potassium sodium tartrobismuthate in the form of insufflations of the powder directly to the lesions is recommended, on account of the antispirochaetal action of the salts and of the rapid diminution of pain accompanying this mode of treatment The insufflations are so given as to deposit about 1 gm of the salt on each daily application; an average case requires 4–5 such dressings The author has treated 64 cases by this method, five of which are described. Similar treatment has proved equally beneficial in Vincent's angina Emphasis is laid on the condition of " tropical ulceration " being always a secondary contamination by the specific organisms The effect of the treatment in question is compared with that of other methods exerting either a local or indirect action on the specific lesions.

W. J O.

SILVESTRO (Lottico) Ulcera tropicale in Tripolitania. [**Ulcus Tropicum in Tripolitania.**]—*Riforma Med.* 1926. May 17. Vol. 42 No. 20 pp 474–475

The author describes a form of treatment of phagedaenic tropical ulcer which has yielded in his hands excellent results and he illustrates his remarks by brief records of four cases The site of the ulcer and its surroundings are thoroughly cleansed, then treated with benzine to remove fatty secretion and disinfected with 1 per cent. acetic acid alcohol He next cauterizes the ulcer with nitrate of silver three or four times, and dusts with iodoform in powder Dumesnil's " Dermoplastol " as an ointment is applied to the surrounding area, the whole is covered with a layer of gauze and, by means of a special apparatus and a crèpe-Velpeau bandage the author obtains a diminution of the superficial circulation with increase of the deep. The patient is able to be up and about during the treatment, which is repeated every four or five days.

H. Harold Scott.

WEHRLE (O). Die Behandlung des Ulcus tropicum mit Desitin. [**Treatment of Ulcus Tropicum with Desitin.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Aug. 1. Vol. 30 No. 8. pp. 348–349.

The use of " Desitin " in the form of an ointment applied on lint to the ulcer and surrounding tissue, to be changed daily or every second day, at the commencement of treatment, is recommended. By such means the author claims to have obtained healing of the lesions in much shorter time than by other measures.

W. J. O.

ESCOMEL (Edm.). Une dermatite climatérique: la *Chapetonada.* [**Chapetonada: a Climatic Dermatitis of Arequipa.**]—*Presse Méd.* 1926. June 12. Vol. 34. No. 47. pp. 747–748.

——. La Dermatitis Climática que se denomina "Chapetonada" en Arequipa—Perú.—*Gac. Med. de Caracas.* 1926. May 15. Vol. 33. No. 9. pp. 131–133.

The denomination of this disease in Peru is traced back to the old slang term used in some South American countries in reference to the Spaniards. The affection appears due to the climatic change, experienced more especially by women and young children, on descending to the sea level from higher altitudes The condition consists of urticarial and erythematous lesions, associated with intense pruritus mainly at night, and distributed particularly on the limbs, hands, face and neck. Such lesions become transformed into pruriginous papules, with vesicular and occasional bullous elements The duration of the condition is variable ; some cases only recover on their return to their homes in cooler higher districts. The general health remains good; there may be slight leucocytosis, fever is absent The disease is not contagious, nor is it inoculable or autoinoculable The prognosis is always good. Treatment consists of a saline purge, adrenalin solution by the mouth, and the local application of a menthol lotion.

W. J. O

ACTON (Hugh W.). **Prickly Heat.**—*Indian Med. Gaz.* 1926. July. Vol. 61. No 7. pp 321–324. With 2 text figs.

A brief account of the affection, which is considered to be due to an infection of the sweat gland orifices by staphylococci, from associated seborrhoeic lesions, occurring in persons improperly clad under tropical conditions The essential point in the treatment is the recognition of the accompanying seborrhoea, with the infective seborrhoeic organisms, as the pathogenic factors. The rash is treated locally by the application of an antiseptic dusting powder, lightly dusted over the affected areas, consisting of sulphur 1, camphor 1, zinc oxide 2, starch 3, boric acid 1 parts.

W. J. O.

HEMMES (G. D) Een geval van "creeping disease". [**A Case of Creeping Disease.**]—*Nederl. Tijdschr. v. Geneesk.* 1926. July 24. 70th Year 2nd Half. No 4. pp. 401–402. With 1 text fig.

Description of a case in a man aged 30, who never had been abroad (village of Heteren, province Gelderland, Netherlands). The site was the volar side of left hand and wrist. The lesion showed as a prominent red line $\frac{1}{20}$ of an inch in breadth and $2\frac{1}{2}$ inches long (from end to end, not counting the numerous convolutions). It had grown as far in 8 days. Endeavours to extract a parasite (refrigeration, incisions) although completely negative were followed by its disappearance within a few days, and so it is concluded that the parasite had been killed by freezing.

N H. Swellengrebel.

REVIEWS AND NOTICES

GRIXONI (Giovanni). [Colonnello Medico Direttore d. Scuola di Sanita Militare.] Geografia medica ed igiene dei nostri possedimenti coloniali. [**Geographical Medicine and Hygiene in Italian Colonial Possessions.**] pp. viii + 229. With 3 folding maps. 1926. Rome: Provveditorato Generale dello Stato Libreria. [Collana medico-militare pubblicata dal Ministero della Guerra Direzione Centrale di Sanita Militare. Vol. 15.] [20 I.]

This is a small book which does not attempt to range outside the lines laid down in the title. It deals with tropical influences and the geographical distribution of diseases in the Italian Colonies and deals with them very well although sometimes briefly. Every young Italian medical officer, whose future work may be in warm climates, should read this book. Colonel Grixoni is Director of the Military Medical School and writes in the first place for military medical officers. The first 86 pages are divided into two Parts, Part I being a general account of the climatological and medical conditions found in hot countries from 32 S. to 36 N. latitude. Prof. Grixoni holds that with due care and knowledge of hygiene—any European can adapt himself to life in almost any climate hot or cold. The difficulties are certainly greater in hot and tropical countries. Arctic conditions are, roughly speaking, controlled by warm clothing and plenty of food. In the tropics not only is it desirable to keep cool but there is danger from the direct rays of the sun, there are dry hot winds trying to the nervous system and so far as climatic influences are concerned there are greater possibilities for contamination of food and water. The effects of various meteorological conditions upon the systems and organs of the body are reviewed and it is noted that the alimentary tract is very liable to disorders especially when hard work has to be done and fatigue is likely to ensue. Next follow sections on the principal diseases of hot climates beginning with sun stroke. These diseases are known and do not require detailed notice. The general history of several important diseases such as malaria, dysentery, smallpox and enteric fevers is recorded and full references are made to workers who have contributed to our knowledge of tropical medicine. Parasitic diseases and the poisonous animals, snakes, anthropods, etc., receive notice.

Part II, good within its limits, treats of hygiene and prophylaxis in warm countries with sections on diet, water and work. The author also records the method of recruiting for colonial forces, gives tables of diet and directions for safeguarding the health of the soldiers. The rest of the book is taken up with three sections describing in detail the climatology, diseases, etc., of three Italian Colonies, Eritrea, Somalia and Lybia. It is not necessary to review these sections in detail. Nothing of importance has been omitted. Yaws, introduced from further west, and rare diseases such as 'ainhum' and latah receive notice. There is a map and a full bibliography for each of these Italian Colonial possessions.

J. H. Tull Walsh.

WENYON (C. M.). C.M.G., C.B.E., M.B., B.Sc. (Lond.), Director-in-Chief of the Wellcome Bureau of Scientific Research, formerly Protozoologist to the London School of Tropical Medicine. **Protozoology. A Manual for Medical Men, Veterinarians and Zoologists.** In 2 Volumes. pp. xvi + ix + 1563. With 565 illustrations and 20 coloured plates. 1926. London: Baillière, Tindall & Cox, 8 Henrietta Street, Covent Garden, W.C. 2. [Price 84s. net.]

This is the largest and most important recent work dealing with the Protozoa as a group but as it deals with various other subjects also—most of them of special interest to readers of this *Bulletin* it seems desirable to indicate its contents more particularly

The work is divided into six main parts of unequal length (i) General description of the Protozoa pp 1 152 (Vol I) (ii) Systematic description of the Protozoa pp 153–778 (Vol I) and 779 1229 (Vol II) (iii) Spirochaetes ' pp 1231 1288 (Vol II) (iv) ' Methods of investigation and Rules of Nomenclature pp 1289–1349 (Vol II) (v) Blood parasites of Vertebrates and Trypanosomidae of Invertebrates pp 1351 1414 (Vol II) (vi) References to literature Protozoa and Spirochaetes ' pp 1415 1514 (Vol II) A full index to both volumes (46 pages) terminates Vol II

With so variegated an assortment of subjects before him the reviewer experiences some embarrassment in trying to consider the work as a whole and he has to confess in the first place that the title Protozoology seems to him a misnomer Apart from the fact that the same name has already been given to another well known treatise on the Protozoa by CALKINS (1909) a book not mentioned by the way even among the references and also to a current periodical it certainly does not adequately describe the contents of the present volumes Protozoology is properly the name of the whole science of the Protozoa (excluding the Spirochaetes) and it appears no more applicable to the work under review than the title Mathematics would be to a book dealing with the differential calculus For Wenyon s work is essentially a book on *medical* protozoology using the term in its best sense It deals chiefly with those Protozoa (and Spirochaetes) which are of particular interest to medical men but deals with them in a manner agreeable to the conventions and canons of zoologists It might perhaps be appropriately described as A Dictionary of Protozoa and Spirochaetes for readers of the *Tropical Diseases Bulletin* If anyone here seeks up to date information about most of those familiar types of Protozoa cherished by our instructors in Elementary Biology he will seek in vain He will here find no adequate account for example of *Amoeba proteus* practically nothing about its morphology physiology life history or about methods for its cultivation and no mention of the divers species (and even genera) into which it has been resolved and he will find but one picture of it dating from the year 1879 borrowed from a book to which no reference is given in the bibliography Far more is now known of this and a host of other common protozoa than the present work might lead the uninstructed to imagine But on the other hand the reader will here find accurate and detailed information regarding the intestinal amoebae of man and other animals accompanied by copious illustrations and references while of the Trypanosomidae again he will find a full up to date well illustrated and abundantly documented account such as he cannot find in any other single work yet published

But it is perhaps unfair to criticize the main title since the subtitle qualifies it by saying that the work is intended for medical men veterinarians and zoologists —the order of precedence evidently implying that it is for medical men first and for zoologists last of all Again the subtitle of the systematic section (Part II) which forms the chief part of the treatise definitely restricts the Protozoa to be dealt with mainly to parasitic and coprozoic forms while it obviously would not have occurred to any zoologist writing for zoologists to reprint the International Code of Nomenclature in a monograph on the Protozoa Moreover the inevitable criticism that the Spirochaetes are improperly comprised in a book on Protozoology is forestalled by the author in his preface where he says that though it is definitely maintained [by him] that they are not Protozoa they have been included because ' the study of spirochaetes is intimately related to that of the Protozoa especially in connexion with blood work ' It seems clear therefore that this treatise is intended as a comprehensive contribution to medical protozoology and as such it is undoubtedly the best which has yet appeared in any language

The classification employed does not, as a whole, depart in any notable particular from the best traditions, though several novel names are used. One curious result of the systematic arrangement adopted for the Mastigophora may, however, be noted. The author puts the Cystoflagellata in the sub-class Zoomastigina, and mentions only a single representative--*Noctiluca*, while he places the Dinoflagellata in a different sub-class—the Phytomastigina Most protozoologists are now agreed, however, that *Noctiluca* actually *is* a dinoflagellate, as BÜTSCHLI long ago suggested. and to separate it from the rest of the Dinoflagellata by so great a gap as is here implied is surely difficult to justify. (It is, indeed, as difficult to understand as the omission of all reference to CHATTON's extensive work on the parasitic Dinoflagellata—a work which ought surely to be at least mentioned in any treatise on parasitic protozoa) On p. 152 the reviewer is credited with the concept that the Protozoa constitute a sub-kingdom, rather than a phylum, of the animal Kingdom. He certainly holds this view, but never claimed to have originated it · for it was expressed, in the English literature, by J R GREENE as long ago as 1863, it was shared by no less an expert than O BÜTSCHLI (1910); and its truth is assumed by everyone who uses the word "Metazoa."

To those who regard the Protozoa from a zoological rather than a medical standpoint, the sections dealing with general biological and cytological topics will probably appear least satisfactory. Part I, moreover, contains numerous loosely-worded statements which even the author himself can hardly be prepared to defend seriously (For example "Protozoa may be of almost any conceivable shape" (p. 19); and "all Rhizopoda . . . . are able to encyst under certain conditions" (p 23)) Nevertheless, the reviewer acknowledges that, when reading this book, he has sometimes been in doubt whether statements which appear erroneous may not, in reality, have been made deliberately They may be due to excess rather than to lack of knowledge But whichever be the correct interpretation, the author has surely performed a remarkable feat in writing a section on "cytoplasmic inclusions" in the Protozoa without so much as mentioning mitochondria or the Golgi apparatus Doubtless he also has reasons for using various accepted terms in an unconventional way · yet it may be pointed out that to write "synkarion" (for synkaryon), to speak of certain animals as "saprophytic" (instead of saprozoic); and to use "free-living" (properly the opposite of parasitic, *sensu lato*) as the antithesis of sessile, is to employ a terminology which is not countenanced by the best biological usage.

The accounts of typically free-living groups—such as the Radiolaria, Foraminifera, or Mycetozoa– appear to the reviewer unworthy of those dealing with parasitic forms. Of the three groups just mentioned, for example, not one is described in terms commensurate with modern knowledge, while most of the classical monographs on all three are missing from the references On matters of ancient history, also, the work, as a whole, is deficient, though on recent developments of the medical aspects of the science it is almost incredibly up-to-date. It seems tô the reviewer a mistake thus to focus attention on so many ephemeral productions of the present day, and to ignore the more lasting background upon which they now cast a fleeting image. It also seems to him remarkable that a work of this magnitude, and with this outlook, should totally ignore the first great contribution to applied protozoology—PASTEUR's "*Maladies des vers à soie.*" But the reviewer realizes that this is probably because he is himself particularly interested in the early history of the subject, while the author manifestly is not: and he is well aware that, in this, modern medical opinion will side with the author

By far the best parts of the book are—in the reviewer's opinion—those dealing with organisms which the author has himself investigated, and upon which he has previously published many well-known original memoirs. On such things as *Leishmania*, malaria, coccidiosis, and the intestinal protozoa of man and other animals, he writes with first-hand knowledge and therefore writes with authority, and he here discusses facts and expresses views and conclusions which deserve—and will surely receive—the careful consideration of his co-workers It is, indeed, safe to prophesy that no future worker on such subjects—at any rate for many a year to come—will be able to conduct his researches without frequent reference to these two volumes In compiling them the author has laid all students of the parasitic protozoa under a deep obligation and no working protozoologist can, in future afford to be without them

Considering the vast size and scope of this work it appears to be relatively free from typographical errors and those detected are for the most part trivial It may be noted however that several proper names are misspelled throughout (e g Muslow for MULSOW Oltmann" for OLTMANNS) and that the organism shown in fig 23 which is there called *Cothurina* but whose name is amended in the *errata* to ' *Cothurinia* —is really *Cothurnia* Fig 13 is labelled *Holomastigoides* —evidently a misprint for *Holomastigotoides* (or possibly *Holomastigotes*) since there is no such genus yet the picture shows a *Pseudotrichonympha* A new genus *Spirillonema* is seemingly proposed in an unorthodox manner on p 747 though the name is first used on an earlier page (p 739 wrongly indexed as 738) and on p 45 a new protozoologist—Nessel also figures apparently owing to mistranslation of the German name for nematocysts (*Nesselkapseln* nettle or stinging capsules)

It may seem ungracious to call attention to bibliographic omissions from a work so generously documented but nevertheless it seems regrettable that various older classics and several more recent monographs (such as LEIDY'S *Freshwater Rhizopods* LANG'S *Lehrbuch* and DELAGE and HÉROUARD'S *Traité*) from which illustrations and other matter have admittedly been borrowed are not specifically cited among the references The host list of blood parasites (Part V) will be of incalculable value to all students of these organisms but here again unfortunately the records enumerated are not all traceable by the references to literature (e g LANGMANN'S work (1899) on the haemogregarines of snakes)

The foregoing comments are made in no spirit of hostile criticism The reviewer after reading the greater part of this work in a critical spirit, has derived much profit from its perusal and heartily recommends it to all serious students of the Protozoa He does not pose as an authority" on the group since any kind of authority in matters of science is to him, anathema Protozoology is now as he is well aware so highly specialized a branch of biology that no one man can hope to master the whole of it Experts on each several group of Protozoa will here find the objects dear to them described and discussed and they will perhaps be tempted to judge the whole work according to the impressions which they receive from such details But it would obviously be unfair to review a compendium of this magnitude in this way The only man who could with any competence criticize a work like this in its entirety would be one who had himself covered the same ground in his own studies and had surveyed the same field from the same angle as the author It is safe to say that no such man exists The reviewer—being fully aware of this—therefore makes the foregoing comments with diffidence He has studied the Protozoa and Spirochaetes for about the same length of time as the author but from a different standpoint and accordingly the work seems to him most open to criticism on those subjects of which he imagines he knows most But as regards those branches concerning which he is most ignorant he has found it a true treasury of information He has noted numerous omissions and—as he believes—errors in the sections dealing with the groups with which he is personally familiar, but he has also found in the disquisitions on organisms of which he knows little or nothing at first hand, many things of which he was totally ignorant, and valuable references to works which he not only has not seen, but has never even heard of He is therefore convinced that this is a book of inestimable value to all working protozoologists, though more especially to those interested in medical aspects of the subject

It remains to add that the general get-up of the volumes is admirable The illustrations are on a lavish scale and for the most part excellent The publishers have evidently spared no expense in production , but the use of highly glazed " art " paper while insuring a brilliant impression of letterpress and figures has made the two volumes inordinately heavy (they weigh together about 10 lbs) and ill-fitted for life in a hot and damp climate

In the past the reviewer has often been asked, especially by medical workers in the tropics, to recommend some trustworthy English book which would give them just the information needed to enable them to pursue the subject of medical protozoology with profit He gratefully acknowledges that in these two volumes he has now at last found an answer to this hitherto unanswerable question

Clifford Dobell

ERRATA

Vol 23 No 8 p 605 SCHUFFNER & RUYS summary (Weil's disease), line 6 For "Leptospira showed agglutination . with the patient's serum in dilution of *1 · 5000 (15th day) 1 2500 (24th day)*, *1:1000 (44th day)*" read "*1:5000 (15th day) 1 25000 (24th day)*, *1:1000 (44th day)*"

No 9, p 662, top line, for LIVIA read LLIVA

BUREAU OF HYGIENE AND TROPICAL DISEASES.

TROPICAL DISEASES BULLETIN.

Vol 23] 1926. [No 12

MEDICAL ZOOLOGY

NIÑO (Flavio L) Contribucion al estudio de la parasitosis intestinal en la poblacion hospitalizada de Avellaneda (Prov de Buenos Aires) Indice amebiano [**Intestinal Parasites among Hospital Patients in Avellaneda, Buenos Aires.**]—*Semana Med* 1926 Mar 18 Vol 33 No 11 (1679) pp 533–560 With 6 figs [74 refs]

This is a most interesting paper, based on an enormous amount of useful work but which being largely statistical does not permit readily of abstraction The author, noting in casual laboratory examinations of faeces the frequency of parasites, particularly Entamoeba, carried out systematic examinations of the excreta of 327 patients during a period of 26 months He found 223 or 66 17 per cent , infested Of these there were 150 or 67 26 per cent of the positives, with a single parasite, 58 with two and 15 with three Protozoal far outnumbered helminthic infestations A remarkable feature is the total absence of hookworm ova, either Ancylostoma or Necator *Ascaris lumbricoides* and *Hymenolepis nana* were common among children The entamoeba of dysentery was found in 53 88 per cent , this high figure includes cyst-carriers and others exhibiting no symptoms as well as those definitely suffering from dysentery Trichomonas was present in 10 39, and Giardia in 6 42 per cent

The second part of the article is occupied by a discussion on this high prevalence of amoebiasis and the epidemiological factors bearing upon it such as (1) the fly-menace , (2) water-contamination, which is serious in the country parts where the water-supply is from wells or runs in canals exposed to the air , the town itself is supplied with water beyond reproach , (3) close contact in the schools, factories and workshops , (4) polluted soil, which is considerable in such a warm, moist atmosphere (5) the existence of the disease in dogs and cats

The article concludes with a detailed narration of three interesting cases of multiple parasitism

H Harold Scott

THOMSON (J Gordon) **Pseudoparasites in the Faeces of Man.**—*Proc. Roy Soc Med* (Section of Trop Dis & Parasit) 1926 May Vol 19 No 7 pp 14–18 With 25 figs on 1 plate [18 refs]

This paper is merely intended to illustrate, by means of a few common mare s-nests, the verity that the microscopic examination of stools and the interpretation of the objects observed is an art, acquired, like other arts, only by long practice and peradventure by tribulation. Every beginner has to "discover" an air-bubble and an oil-globule at least once. Starch-granules, pollen grains, vegetable cells and fibres, vegetable spores of various shape, the "grit" (sclerenchyma) of various fruits, undigested or partially digested fragments of food of all kinds, all may cause confusion. Human intestinal cells, of which a plate of 25 figures is given, are a pardonable source of error. It is only after some experience that an observer learns that those familiar implements of research the distilled-water flask and the normal saline bottle may contain a fauna of protozoa, rotifers, and even microscopic nematodes Then there is the infusorial fauna that accumulates in stools that are not fresh. Besides all these there is an extraordinary miscellany of free-living animals that may be passed, particularly in the stools of children. And finally there are parasites of other animals that may be swallowed in food. These last may deceive the very prophets themselves, as the authors have recently pointed out in their account of the two common species of fish-coccidia whose spores recovered from human faeces have actually been described as new parasites of man—*humanum est errare.*

A. Alcock.

BAYLIS (H. A.). **On the Correct Use of Host-Names. An Appeal to Parasitologists.**—*Parasitology.* 1926. June. Vol. 18. No. 2. pp. 203–205. [1 ref.]

Since the name of its specific host may be a useful clue to the identity of a parasite, the author appeals to all good men always to refer to the host by its scientific name. Vernacular names of hosts, like "sapakara" and "comondongo" have no significance outside their own small province. Popular names, like "bison" and "dogfish," are ambiguous, since they are used in different senses in different parts of the world ; or, like "tadpole-cat" and "johnny darter," are often downright misleading, since they may suggest an object of the wrong class—a stone instead of bread.

The author does not, however, quite forget the uncertainty that hangs about even scientific names, which he thinks can be eluded by mentioning both "old" and "new" host names, or by sticking resolutely to one standard authority.

A. A.

KLIGLER (I. J.) & WEIZMAN (I). **The Nature of Immunity to a Protozoan Infection.**—*Proc. Soc. Experim. Biol. & Med.* 1926. Feb. Vol. 23. No. 5. pp. 355–358. [8 refs.]

The paper deals with some aspects of acquired resistance. Rabbits and guineapigs cured of a *Trypanosoma evansi* infection by "Bayer 205" were resistant to re-infection for several months. Rabbits repeatedly injected with *T. evansi* material with a view to immunization became more susceptible to infection instead of more resistant ; but when injected with a mixture of *T. evansi* and "Bayer 205" they became remarkably resistant. Benzol, which destroys leucocytes, and large doses of olive oil which "block" them naturally vanquish resistance.

A. A.

HEGNER (R. W.). **Animal Infections with the Trophozoites of Intestinal Protozoa and their Bearing on the Functions of Cysts.**—*Amer. Jl. Hyg.* 1926. July. Vol. 6. No. 4. pp. 593–601. [8 refs.]

The aim of the experiments here recorded was to ascertain whether the active trophozoites of intestinal protozöa injected into the stomach are able to reach that region of the alimentary tract where they are localized normally. Guineapigs and the following protozoa were employed: *Balantidium coli* (from pig); *Trichomonas caviae* and *flagelliphora* and *Chilomastix intestinalis* (all from guineapigs); *Entamoeba histolytica* (from cultures) and *E. muris* (from rat); and *Giardia canis* (from dog).

The authors give their evidence for concluding that active trophozoites of the first four species may pass on unharmed to the caecum of the guineapig, and in the case of *Bal. coli* may lodge there as an infection; that active trophozoites of *E. muris* and *G. canis* may pass beyond the stomach unharmed; and that active trophozoites of *E. histolytica* may survive in the stomach for some time. They do not think, however, that the results deduced from some of their experiments indicate the usual method of infection in nature—which is by cysts

A. A.

LYNCH (Kenneth M.). **Intestinal Flagellate Infestation: Clinical Analysis.**—*Jl. Amer Med. Assoc.* 1926. July 3. Vol. 87. No. 1. pp. 4–6. With 1 chart in text. [2 refs.]

The author analyses here the data accumulated in the study, continued during about four years, of 1,040 consecutive cases having gastro-intestinal symptoms. Intestinal Flagellates were discovered in the stools in 23 per cent. of the cases, the percentage of particular organisms being *Trichomonas hominis* in 12·5, *Chilomastix mesnili* in 7·5, *Giardia intestinalis* in 2·3, and *Tricercomonas intestinalis* in 1·5—besides 1·7 "unidentified" The average incidence was higher in the warmer months (May-November) than in the colder (December-April), namely 27 per cent. in the former, and 15 per cent. in the latter.

The critical study is to be continued, but so far the author is unable to convict these intestinal flagellates of pathogenous activity, with the somewhat doubtful exception of chronic cholecystitis. It seems fairly clear to him, on the other hand, that advanced age and diminished gastric acidity are predisposing factors in infestation.

A. A.

DESCHIENS (R). Les infections intestinales à flagellés au Maroc. [**Flagellate Intestinal Infection in Morocco.**]—*Bull. Soc. Path. Exot.* 1926. May 12. Vol. 19. No. 5. pp. 353–359. [14 refs.]

Multiple and single Flagellate infections have been observed in 10·7 per cent. of sufferers from intestinal disorders in Morocco—*Chilomastix mesnili* in 7·5 per cent. of stools examined, *Giardia intestinalis* in 1·5 per cent., *Trichomonas intestinalis* in 1·5 per cent., and *Cercomonas longicauda* in 0·2 per cent. The pathogenous effects of *Giardia* are generally admitted, and it is very likely that *Chilomastix* and *Trichomonas* also cause or complicate intestinal disorders.

In the temperate regions of the Mediterranean basin infections of *Chilomastix* are more frequent than infections of *Trichomonas*; in the intertropical regions the reverse is the case.

A. A.

GLASER (R. W.). **The Isolation and Cultivation of** *Herpetomonas muscae-domesticae*.—*Amer. Jl. Trop. Med.* 1926. May. Vol. 6. No. 3. pp. 205-219. With 2 plates. [17 refs.]

Describes a method by which *Herpetomonas muscae-domesticae* can be freed from its concomitant intestinal flora and grown indefinitely in pure culture. The details are too long to quote, but the principles of the method are : (1) to get rid of the intestinal flora by inoculating the diluted gut-contents of the infected fly into a number of fairly well-grown silkworms. Most of the silkworms (sometimes, unfortunately, all of them) die of bacterial septicaemia as a result, but in the survivors a few herpetomonads may be found for a time without concomitant bacteria. From the blood of these survivors pure cultures of the herpetomonas can be raised (2) on a special medium consisting mainly of filtered crushed silkworm-juice and afterwards (3) by transplantation on to NNN and other media.

A A.

CASTEX (Mariano R.) & GALAN (Julio César). La giardiase duodénale. [**Giardiasis of the Duodenum.**]—*Bull. et Mem. Soc. Méd. Hôpit. de Paris.* 1926. Mar. 11 Year 42. 3rd Ser. Vol. 50. No. 9. pp. 385–388. [15 refs.]

The authors refer to previous observations on this subject.

In the present paper they discuss the subject of vesicular Giardiasis, based on a study of two cases in one of which although Giardia was found both in the faeces and in the duodenal fluid obtained by tubage, yet it was not to be found either on the wall or in the bile of the gall-bladder when that organ was removed by operation. This, they insist, is no proof that the parasite does not get into the gall-bladder, but merely demonstrates that it is not to be inferred to be in the gall-bladder because it is found by duodenal tubage—unless it be certain that the fluid obtained by tubage is " bile B " (i.e. pure bile unmixed with duodenal fluid).

A. A.

MARCELLUS (M. B.). [**Giardiasis (Lambliasis); Five Cases.**]—*U.S. Veterans' Bureau Med. Bull.* Wash. 1925 Dec. Vol. 1. p 1. [Summarized in *Jl. Amer. Med. Assoc.* 1926. Jan. 16. Vol. 86. No. 3. p. 229.]

Five cases of giardiasis from Portland, Oregon. Usual symptoms of chronic enterocolitis or cholecystitis, weakness, loss of weight, neurasthenia. Tubage revealed in four cases many active forms in the bile.

A. A.

FÉDOULOW (A. W). *Chilomastix mesnili* à Tachkent. [*C. mesnili* **at Tashkent.**]—*Jl. Méd. de l'Asie Centrale.* 1926. Vol. 5. No. 2. French summary pp. 139–140. [In Russian pp. 99–103.]

The French summary merely states that the Russian author describes four cases of enteritis in which *Chilomastix mesnili* was observed in the faeces, and thinks it possible that the organism is pathogenous.

A. A.

WENYON (C. M.). **Coccidia of the Genus *Isospora* in Cats, Dogs and Man.**—*Parasitology.* 1926. June. Vol. 18. No. 2. pp. 253–266. [11 refs.]

This is a reply to DOBELL's criticism (*ante* p. 702) of the author's paper (*loc. cit.*, Vol. 20, p. 785) on the Isospora of cats and dogs and man. The author sees no reason for altering his original conclusions, which are reaffirmed as follows :—

"Cats and dogs are liable to infection with three species of *Isospora*, viz., *Isospora felis*, Wenyon, 1923, with oöcysts 30–45 microns in length, *Isospora rivolta* (Grassi, 1879), with oöcysts about 20–25 microns in length, and *Isospora bigemina* (Stiles, 1891) with oöcysts about 10–16 microns in length. *I. bigemina* is very liable to invade the sub-epithelial tissues of the villi, in which case the oöcysts attain maturity in this situation. It is possible that *I. rivolta* may behave in a similar manner.

"Human beings are liable to infection with *Isospora belli*, Wenyon, 1923, and possibly a smaller species *Isospora hominis* (Railliet & Lucet, 1891) which, as far as can be judged from the published record of Virchow, resembles *I. bigemina* as it occurs in the dog. It is not admissible to conclude without further evidence that these two forms, *I. belli* and *I. hominis*, are identical"

A. A.

CHATRIDSE (I) & KIPSCHIDSE (N) Ueber einen Fall von Coccidiosis beim Menschen, Spezies *Isospora hominis* [**A Case of Coccidiosis in Man.**]—*Arch f. Schiffs- u Trop-Hyg.* 1926. June 1. Vol. 30. No. 6. pp. 248–250. With 1 text fig.

This is said to be the first case of coccidiosis reported from Georgia, the patient, a man of 50 years, having lived all his life in the neighbourhood of Tiflis. Under the influence of injections of emetine the number of oocysts was greatly reduced.

A. A.

HEGNER (R. W.) & MACDOUGALL (Mary Stuart). **Modifying the Course of Infections with Bird Malaria by Changing the Sugar Content of the Blood. (Preliminary Report).**—*Amer. Jl. Hyg.* 1926. July. Vol. 6. No. 4. pp. 602–609. With 5 text figs. [10 refs.]

In the experiments here outlined, which were suggested by the fact that BASS and JOHNS had cultivated malaria parasites in the blood of a diabetic without addition of sugar to the culture-medium, the authors hoped to obtain some light on a possible cause of relapses in malaria. They used infected canaries, increasing the sugar of the blood by giving them glucose-solution and decreasing it by insulin injected through the peritoneum A later and fuller paper is promised. For the present, the authors have no doubt that an increase of the blood-sugar is favourable for the parasite, prolonging the infection to a fatal ending. Experimental attempts to decrease the sugar of the blood by means of insulin have, they say, given suggestive but not conclusive results.

A. A.

DUNCAN (J. T.). **On a Bactericidal Principle present in the Alimentary Canal of Insects and Arachnids.**—*Parasitology.* 1926. June. Vol. 18. No. 2. pp. 238–252. [7 refs.]

The author has investigated the nature and properties of a bactericidal principle existent in the gut-contents—and in the case of the insects also in the faeces—of the following arthropods: *Stomoxys calcitrans, Musca domestica, Anopheles bifurcatus, Aedes cinereus, Cimex lectularius, Rhodnius prolixus, Argas persicus,* and *Ornithodorus moubata* In all experiments the gut-contents or faeces were first heated to 60° C to overpower any bacteriolysin derived from the host's blood, etc

The bacteria most affected were the common sporing aerobes and the staphylococci, but *B anthracis* was destroyed by the gut-contents of Stomoxys, and *M catarrhalis* and *S haemolyticus* by those of Argas

The conclusions from the bactericidal and absorption tests are that the active principle in any one species of arthropods is single and that different groups of bacteria differ in their degree of susceptibility, many bacteria being wholly resistant The widest range of action was shown by the gut-contents of Stomoxys and Argas and the least by those of bugs Sporing bacilli are more susceptible and staphylococci less susceptible to Stomoxys material than to Argas material The gut-contents of the ticks had a feebly destructive action on *B pestis*, but those of some of the insects enhanced the growth of *B pestis*

The bactericidal principle is more active at 37° C than at room temperature, is not attended by any visible bacteriolysis, retains unimpaired activity for at least 6 months when kept dry resists temperatures as high as 120° C is not destroyed by tryptic digestion, is precipitated from solution with proteins by alcohol and by acetone but is itself not affected by those re-agents, and is not soluble in the common fat-solvents By repeated action on small doses of bacteria it rapidly becomes exhausted, and it can be inactivated by large doses of killed bacteria, even of species that are not destroyed by it It may be adsorbed in small amount by absorbent paper It shows none of the properties of the bacteriophage and it differs from lysozyme In action it closely resembles an antiseptic In respect of its source, it is formed, somehow, in the stomach, but not from the hosts blood

A A

PATERSON (Nellie F) **The Effects of Changes of Hydrogen-Ion Concentrations on Culicine Mosquito Larvae.**—*S African Jl Sci* 1925 Nov Vol 22 pp 311–317

An account of some laboratory experiments with larvae of *Culex fatigans* and *Theobaldia longiareolata* treated with larvicidal solutions of varying pH concentration The larvae were taken from water having a pH concentration of 7 8 and it is claimed that larvae survived longer and went on to their final metamorphosis into adults more frequently in solutions having a pH value of 7 8 or 7 6 than in other solutions The solutions used were copper sulphate, superphosphate, lime, and common salt The experiments with copper sulphate do not seem to have shown more than that strong solutions are more toxic than weak solutions On the other hand, in weak solutions of lime (17 in 10,000,000, and pH concentration of 8 4) larvae succumbed in four days, whereas in very much stronger solutions (17 in 100,000 with a pH concentration of 10) larvae lived for 47 days and 15 per cent of them went on to the adult stage Similarly, in weak solutions of superphosphate (17 in 1,000,000, with a pH concentration of 7 2) larvae died in five days, whereas in a stronger solution (17 in 100,000 with pH 5 8) larvae lived for 17 days and 10 per cent went on to the adult stage, and in still stronger solution (17 in 2,000 with pH_8, and 17 in 10,000 with $pH_{8\,4}$) they lived for three days [The experiments in every instance seem to have been conducted by introducing 20 larvae (at different instars) into 200 cc of the sterile solution to be tested, so that the value of their practical application in a natural environment is not easy to estimate]

A A

SYMES (C B) **The Mosquito Problem in Kenya.**—*Kenya Med Jl* 1926 July Vol 3 No 4 pp. 93–103

The author, who refers to himself as " a mere entomologist," states that in 1925 over 20 per cent of all cases treated in Kenya Government hospitals, 13 7 per cent of the sick-rate of the King's African Rifles, and nearly the same sick percentage of the staff and recruits at the Police Depot at Nairobi, were due to malaria and that " in the absence of definite records one gathers the impression that malaria is worse now in Kenya than it was 20 10, or even 5 years ago " Most of this paper on the mosquito problem covers the usual well-known ground, though the author notwithstanding the significance of some of his local observations, does not appear to realize the potent influence of the dwelling-house upon the incidence of malarial infection

The following interesting items may be noticed On plantations (estates) in Kenya *A costalis*, *christyi* and *funestus* appear to be the prevalent species, but labour is so easily obtained that managers have not yet learned to realize the practical importance of malaria

On Native Reserves the indigenous methods of cultivation encourage mosquito-breeding It has been noticed, however, in the course of collection that native " huts with fires are not attractive to food-seeking female mosquitoes and that " in native villages it is in the huts set apart for the unmarried members of the community that the majority of Anophelines is found In these huts no cooking goes on and no fires are lighted Dealing with towns (Nairobi) the author thinks it quite safe in saying that 75 per cent of the Nairobi mosquitoes breed in waters that result directly from man s activities ' Five species of Anopheles known to be malaria-carriers breed in the town including *costalis* and *funestus* In the course of a survey of the house haunting mosquitoes 98 per cent of the total catches made in houses in May and the last 10 days of April were Anopheles and 98 8 per cent of the species were *A costalis*

A A

HACKER (H P) **How Oil kills Anopheline Larvae.** [Thesis]—*F M S Malaria Bureau Reports* 1925 Vol 3 62 pp With 2 plates and 1 text fig [Numerous refs in footnotes]

The author deals in infinitesimal yet interesting detail with the appearances seen in larvae killed by contact with oil, with the effects of differential wetting of the larval structures on the posture of the larva and on the mode of action of oil, with the effect of water on the killing power of oil, determined by observing the length of time a larva survives in clean water after a term of exposure to an emulsion of given strength, with the effect of oil vapours, with various conditions affecting the spread of oil on water, and with the relation between spreading and toxicity

The following are his general conclusions —

" (1) Differential wetting has been shown to be an important factor in the life-history of larvae and in their susceptibility to the effects of oil

" (2) Anopheline larvae place themselves at right angles to a wet object because their tails are wet and their spiracles are dry The larvae lie parallel to a dry object because their dry spiracles are attracted '

"Oil on the surface of water acts like a dry object and ' attracts ' the spiracles When contact takes place the oil is able to wet the spiracles and therefore enters the breathing tubes Contact with oil is sufficient to kill larvae and the appearances shown by oil in the tubes have been described

" (3) A 0 1 per cent solution of soap is able to wet the spiracles so that the larvae can no longer rest at the surface and ultimately drown

' (4) Weak emulsions of oils do not enter the breathing tubes and kill larvae unless there is a film of oil on the surface Wet oil does not ' attract ' the spiracles of larvae

" (5) The spread of oil and the movement of thymol particles depend on the affinity of water for active groups in the substance Both may be prevented by satisfying this affinity by saturating the water with a material containing an active group

' (6) Pure hydrocarbons do not spread on water Oils that spread contain substances which have active groups and these substances have an affinity for the oil on one hand and for water by means of their active groups on the other

" If the oil contains too much active material the excess leaves the oil satisfies the affinity of the water for active groups and thereby prevents the oil from spreading

" Crude oil has been shown to be a satisfactory mixture because it does not contain an excess A method of testing whether any given mixture contains too much active material has been described

" (7) Methods for comparing the spreading powers of oils have been suggested One of these depends on the amount of oil which must be added to pure paraffin in order to make the mixture spread The other is based on the extent to which inactivated water must be diluted with fresh water before the oil can spread

" (8) The substances which cause spreading are increased by oxidation

" (9) Pure hydrocarbons are able to wet the spiracles They can thereby enter the breathing tubes to kill larvae

" Volatile hydrocarbons condense as a film on the lining of the breathing tubes and produce a pseudo anaesthetic effect

" This film increases the absorption of alcohols and thereby enhances their toxic action which is a true anaesthesia

' (10) The toxicity of kerosene is increased by oxidation in the same way as the spreading power The toxicity and the spreading power are therefore probably due to the same substances

A A

COGGESHALL (Lowell T) **Relationship of Plankton to Anopheline Larvae.**—*Amer Jl Hyg* 1926 July Vol 6 No 4 pp 556–569 [11 refs]

This paper gives the results of studies carried on at a Field Station for Malaria in Georgia, the larvae studied by field observation and dissection were *Anopheles crucians, punctipennis,* and *quadrimaculatus* , the breeding-places of which the characters and plankton were observed and determined were ponds, streams, swamps ' lime-sinks,' borrow-pits wells, sumps, and " syrup-kettles '

For these 3 species ponds are a most prolific breeding-ground, especially near habitations Larvae were found in nearly all streams, but not in running streams Dense dark swamps not reached by the sun contained no larvae, not even when near habitations frequented by adults Borrow-pits did not harbour larvae if they were bare of vegetation Wells, although their food-supply was scanty, bred *A punctipennis* Larvae were found in a sump containing large numbers of green algae and giving out an odour

Repeated observations indicated that the larvae specified had no predilections in the matter of food but adapted themselves to the plankton of the water they happened to be in It seemed likely, however, that the female Anopheles exercised some discrimination in depositing her eggs on water having an odour

A A

Bradley (G H) **Observations on the Emergence of Anopheles Mosquitoes.**—*Amer Jl Trop Med* 1926 July Vol 6 No 4 pp 283–297 With 2 plates [7 refs]

This paper describes observations made to determine the rate of emergence of Anopheles from breeding-waters (and the numerical proportions of the sexes) per unit of area Nets suspended on floats (or cages resting on the bottom) were used for trapping the emerging insects the stations of these were shifted and only the numbers emerging in the first four days at each station were included in the calculations Concomitant surveys were made of the " larval density " of the waters under observation

In 904 9 square yards of water surface covered by nets, 585 adult Anopheles emerged into the nets—a daily average of 0 653 per sq yd The nets were stationed in areas that showed a higher larval count than was usual in the local breeding-grounds ' The females of Anopheles were found to emerge in somewhat greater numbers than the males " But it does not follow from these limited observations that females are produced in nature in greater numerical proportions than males]

A A

Mayne (Bruce) **Notes on the Influence of Temperature and Humidity on Oviposition and Early Life of Anopheles.**—*Public Health Rep* 1926 May 21 Vol 41 No 21 pp 986–990 [1 ref]

This paper records some suggestive observations particularly upon the influence of temperature on the egg and larva stages of the Anopheles of the southern U S A Although in these States all stages of Anopheles may be found during the colder months eggs are not laid at temperatures of 40°–54° F and are not hatched at temperatures of 58°–59° F though laying occurs at temperatures of 55°–62° F and hatching at 66°–70° F Of 487 eggs laid at temperatures of 56°–62° none hatched during an observation term of 14 days, but 100 eggs laid in the same circumstances and kept at room temperature hatched in 31 hours In cold weather Anopheles larvae shelter in the bottom mud particularly of deep waters Eggs of *A quadrimaculatus* kept on drying mud in the months July–September retained their vitality for terms ranging from 42 hours to 16 days, and those of *A crucians* for 10 to 21 days The mud in these experiments usually dried up in sixteen hours It was found that larvae hatched from these desiccated eggs might complete their ontogeny in water that contained nothing but the original mud

A A.

DAVIS (Nelson C.). **Study on the Dispersion of Resting Anopheline Mosquitoes from Dwellings in Brazil.**—*Amer. Jl. Hyg.* 1926. Mar. Supp. Vol. 6. pp. 23–35. [9 refs.]

The author gives the results of some experiments undertaken in warm weather in some coastal towns of Rio de Janeiro to determine how far individual Anopheles tended to establish themselves in particular houses. The houses selected for observation were situated in the poorer districts. The method of experiment was to spray the mosquitoes found at rest in the particular house on a given day with a stain, and to make daily captures in that house on subsequent days, examining the captures for stained Anopheles. The results showed that only 3·1 per cent. of all the Anopheles resting in all the particular houses on given days were present in the same houses on the days immediately following. [It is doubtful whether statistics of this sort, in which the conditions within and about the particular houses observed are assumed to be uniform, are of great value.]

A. A.

SENEVET (G.) *Anopheles algeriensis* transmet-il *Filaria bancrofti ?* [**Does** *A. algeriensis* **transmit** *F. bancrofti ?*]—*Arch. Inst. Pasteur d'Algérie.* 1925. Dec. Vol. 3. No. 4. pp. 434–435. [4 refs.]

The author states that there is no evidence to justify the assertion that *Anopheles algeriensis* is an intermediate host of *Filaria bancrofti.* The assertion is traced by him to the carelessness of a reviewer.

A. A.

DUNN (Lawrence H.). **The Prevalence and Distribution of the Yellow Fever Mosquito,** *Aedes aegypti* **(Linn.), in Venezuela.**—*Amer. Jl. Trop. Med.* 1926. May. Vol. 6. No. 3. pp. 181–193. With 1 map in text.

Twenty-six towns and villages in northern Venezuela were inspected for *Aëdes aegypti* ("Stegomyia fasciata") by the author and his colleague, in 1925, the survey including 3,506 dwellings and 10,229 water-vessels of various sorts. In all the places except Calabozo, Ortiz, and Cristobal *A. aegypti* was found breeding.

A. A.

ROUKHADZÉ (N.). *Anopheles nigripes* Staeg. (1839) en Abasie (Géorgie). [*A. nigripes* **in Georgia.**]—*Bull. Soc. Path. Exot.* 1926. May 12. Vol. 19. No. 5. pp. 337–339.

According to this author larvae of *A. nigripes* (i.e., *A. plumbeus*) have been found, in Georgia, not usually in holes in trees, but in various places of other kinds—reservoirs of canals, old wells, earthen pots—where the water was foul from the presence of decaying leaves and other organic exuviae.

A. A.

LINDTROP (H.). Ueber das Vorkommen der *Stegomyia fasciata* am Kaukasischen Ufers des Schwarzen Meeres. [**Occurrence of** *S. fasciata* **on the Caucasian Shore of the Black Sea.**]—*Russian Jl. Trop. Med.* 1926. No. 4. German summary p. 76. [In Russian.]

The summary states that *Stegomyia fasciata,* which was noticed for the first time in Russia (at Batum) by MARZINOWSKI in 1913, was observed by the author at Sukhum and several other ports on the Caucasian side of the Black Sea during 1925 The winter of that year was uncommonly severe, 8 to 10 or even 12 degrees of frost having been registered and more than half of the orange trees destroyed

A A.

SHAKHOV (S D) *Aedes calopus* **Mg. according to the Observations of the Entomological Expedition in Abkasia.**—*Rev Microbiol et Epidémiol* 1926 Vol 5 No 1–2 English summary p 107 [In Russian pp 33–42. With 4 text figs 5 refs]

The summary states that *Aedes calopus* (*Stegomyia fasciata*) has been observed in two Black Sea ports, namely, Sukhum (lat 43° N) and Gudanti (lat 43°–15′ N), further north than had ever been recorded before They were found only in houses and breeding in water-butts.

A A

SINTON (J A) **A Simple Box for Class Demonstrations of Mosquitoes and other Small Insects.**—*Indian Jl Med Res* 1926 July Vol 14 No 1 pp 235–238 With 8 figs on 1 plate

Description in minute detail of treating an ordinary glass-bottom, cardboard, specimen-box (" pill-box ") so that a specimen can be viewed from one side as well as through the bottom now treated as the top [The method is more elaborate, and the results may be more elegant than the use of a short wide, specimen-tube having a well-fitting stopper of ' cork-composition, ' but it does not seem to be nearly so convenient]

A A

YOUNG (T C McCombie), RICHMOND (A E) & BRENDISH (G R) **Sandflies and Sandfly Fever in the Peshawar District.**—*Indian Jl Med Res* 1926 Apr Vol 13 No 4 pp 961–1021 With 9 charts, 1 text fig and 13 figs on 5 plates [23 refs]

The chief practical aim of the investigations here recorded in replete detail was to discover the breeding-grounds of *Phlebotomus papatasii* with the object of controlling them in the prevention of Phlebotomus fever Two areas were included in the scope of the survey, namely (*a*) the Peshawar Cantonments of the plains, and (*b*) the standing camp of Landikotal in the Khyber Pass where the incidence of Phlebotomus fever is exceptionally high

The prospective search for breeding-grounds was begun in Peshawar by the methodical collecting of adult sandflies in the various barracks and lines From the condition of the ovaries of the captured females, the contingency of breeding-grounds might reasonably be inferred. From this preliminary survey the important conclusion emerged—that the particular circumstance alone common to the several barracks most heavily infested with sandflies was the contiguity of broken ground

The actual determination of breeding-grounds, of course, could only be carried out by actually searching soil for larvae This was done by washing samples of soil through graduated sieves and mixing the final strainings with a concentrated solution of clean sugar so as to float the larvae for easy identification

Landikotal, where the survey was continued, is a large hutted camp surrounding a fort on an alluvial plain at an average elevation of 3,500 feet There is a garrison of 4,000 troops, British, Gurkha and Indian.

There is no pukka drainage, and such waste water as is not caught in soakpits finds its way with storm water down nullahs. Here again the breeding-grounds of *P. papatasii* were found to be in the deeper and moister layers of the organic matter that accumulates in broken and fissured soil of banks and nullahs.

It may be added that the authors confirmed by experiment the necessary conditions for a breeding-ground. An earthen pot, filled with a mixture of soil and organic matter under a superficial layer of clay in which cracks had formed by drying, was stood in water (to keep the contents moist) and placed in a cage of sandflies ; it formed a prolific and perennial breeding-pot for laboratory requirements.

" The problem of permanent material reduction of sandfly breeding in Landikotal would therefore appear to resolve itself into measures aimed at abolishing broken ground in the sides of the nullahs "

The authors discuss other prophylactic measures—repellents, fumigation, illuminated traps—but have little good to say of them as affording other than purely individual and personal relief.

They were unable to confirm WHITTINGHAM's conjectures of a Leptospira as a causative agent in Phlebotomus fever, although they are inclined to think that an investigation as to the existence of leptospirae in earth where Phlebotomus breeds is a promising line of work.

They note a direct relation between rainfall and time and intensity of seasonal incidence of Phlebotomus fever—e.g. an earlier and lighter incidence after a failure of the normal spring rains.

Other species of Phlebotomus found in the Peshawar district besides the prevalent *papatasii* are *minutus* and its *antennatus* variety, *squamipleuris*, and (at Landikotal) *sergenti*.

A. A.

POPOW (P P). **An Essay on the Study of Phlebotomus in Russia. Chapter I.**—*Russian Jl Trop. Med* 1926 No. 4 English summary p. 77. [In Russian]

The summary states that in Russian Turkestan sandflies were first noticed by FEDSHENKO, who recognized provisionally 3 species, one of which he thought might be *Phlebotomus papatasii* In the original Russian text, which is illustrated, the anatomy of Phlebotomus and the characters of the Russian species are described.

A A.

DE (S N.) *Phlebotomus argentipes*—*Indian Med Rec* 1926 June. Vol. 46. No. 6 p 170 With 2 text figs

There is nothing new or original in this paper regarding *Phlebotomus argentipes* and its recently-discovered pathogenous significance. The author makes some obvious suggestions as to the necessity of excluding it from human dwellings.

A. A.

SMITH (R. O. A). **A Simple Method for the Staining and Mounting of Sandflies.**—*Indian Jl. Med. Res.* 1926. July. Vol. 14. No. 1. pp. 171–172. With 1 plate.

The well-known method of softening in cold KHO solution, staining (in hot carbol-eosin), clearing, and mounting in thin Canada balsam.

A. A.

Cousin (G) Influence du temps réservé à la nutrition sur les phases du cycle évolutif et les métamorphoses de *Calliphora erythrocephala* **[Influence of the Nutrition Period on the Phases of Evolution and Metamorphoses of** *C erythrocephala*]—*C R Soc Biol* 1926 July 23 Vol 95 No 26 pp 565–568 [2 refs]

The author gives here an account of his experiments in rearing larvae of the blow-fly, *Calliphora erythrocephala*, under varying conditions of *starvation*, the suitable temperature and moisture of the air apparently being undisturbed

To begin with, he satisfied himself that at a temperature of 18°–20° C and with a superabundance of food, the mean durations of the several stages, from hatching of egg to the completion of the full cycle in the production of eggs for the next generation were as follows —

Mean active larval life	8 days
Inactive or torpid pre-pupal stage	3 or 4 days
Pupa stage	13 to 14 days
Interval between eclosion of adult and deposition of eggs	8 to 10 days

Larvae fed sparingly and irregularly had a larva stage prolonged to twice the normal length but the incidence and duration of the subsequent phenomena were not affected, though the adults produced were under size

Larvae fed generously up to the 6th day of life and then abruptly starved, at once went into the inactive stage , but as before the subsequent phenomena were normal in onset and duration, the adults produced being similarly under size

Larvae fed generously for two days (when they are from one-eighth to one-tenth the normal full size) and then abruptly starved, gradually (1 to 3 days) dropped off into the pupa stage after a varying term of great excitement The smallest pupae had a polar diameter of 4 millim and an equatorial diameter of 1 5 millim As in all the other starvation experiments however, the normal length of the pupal stage was not affected and the female adults proceeded to lay eggs 7 to 10 days after eclosion the adults, however, being mere dwarfs

The larvae issuing from the dwarfs' eggs repeated the history of their dwarf parents only when they were reared under the same starvation conditions This reproduction of starvation dwarf blow-flies was continued for 3 generations The larvae issuing from eggs of the 3rd generation were liberally fed in a normal manner, and so grew to their full specific stature and developed into adult blow-flies of the normal size for the species

A A

Sutton (E A) **A Case of Myiasis of the Temporal Bone.**—*Jl Roy. Army Med Corps* 1926 July Vol 47 No 1 pp 61–63 With 1 text fig

The patient in this case was a European woman, in India , the lesion was a sinus behind the ear, resulting from neglect of an abscess that had formed about 7 years previously, which had now become infested with maggots of the blow-fly *Chrysomyia bezziana* The patient was in great pain and had a temperature of 104 6° F

On removal of some rough dressings, an open, deep, foul cavity was disclosed, inhabited by active viciously-adherent maggots (to the number of 137) When these had been removed after flooding with a 4 per cent solution of chloroform water, it was found that almost all the petrous portion of the temporal bone was gone, and the dura mater laid bare in places, the damage being dangerously near the lateral sinus A probe could be passed into the cavity through the auditory meatus Under antiseptic irrigation and packing with iodoform gauze, granulation began but the prospects of complete obliteration of the cavity are doubtful The patient was extremely ill for the first week after admission, and for the first four days was in such pain that she had to be kept under the continuous influence of morphia

A A

CROSS (H E) **Bot Flies of the Punjab.**—*Agric Res Inst Pusa Bull No 160* 1925 16 pp With 8 plates

This useful compilation contains besides descriptive matter a number of plates in which are figured the adults and the successive stages of the larvae, with their characteristic posterior spiracles 'of the Oestridae known to occur in goats sheep catttle, camels and the horse in the Punjab

A A

SHANNON (R C) & GREENE (C T) **A Bot-Fly Parasitic in Monkeys.**—*Zoopathologica* New York 1926 Jan 22 Vol 1 No 7 pp 285–290 With 1 text figs

Description and figures of *Cuterebra baeri* Shannon & Greene a bot fly maggot by which certain specimens of a howling monkey (*Alouata palliata*) from Panama have been observed to be heavily parasitized

A A

SEYDEL (Ch) Les glossines au Lomami [**Tsetse Flies at Lomami.**]—*Bull Med du Katanga* 1926 May Vol 3 No 2 pp 52–55

[The equatorial district of Lomami in the Belgian Congo lies between lat 34° and 35° E and the author s observations appear to have been made late in 1925] *Glossina morsitans* was very much scarcer than KLEINE recorded it to be in 1923 this the author attributes to clearing, destruction of game, cultivation, and other influences facilitated by the new railway *G brevipalpis* seen often enough in 1923 was now not observed at all *G palpalis* appears to have been observed almost everywhere along the author's route, even at places where the banks of the river had been denuded The author, indeed, noticed that careless clearing where the trees are actually felled wholesale and left to encumber the stream is propitious to *G palpalis*

A A.

ESSED (W F R) De *Sarcopsylla penetrans* en hare betrekkingen met de Elephantiasis arabum in de Kolonie Suriname [*Sarcopsylla penetrans* **and its Relation to Elephantiasis in Surinam.**]—*Geneesk Tijdschr v Nederl -Indie* 1926 Vol 66 No 3 pp 424–440 With 12 figs on 1 plate [7 refs]

The flea may penetrate into the corium, but usually remains in the epidermis, Oviposition is by no means always accompanied by suppuration, which indeed sometimes follows the death of the female The high incidence of the parasite, together with the methods practised for its extraction, frequently cause lymphangitis, and this, in the author's [and others] opinion provides one of the necessary factors in elephantiasis, the others, viz *Filaria bancrofti* and *Culex fatigans* also being abundantly represented

N H Swellengrebel

WAGNER (J) & IOFI (I) Materialen zum Studium der Ectoparasitenfauna im S-O Russlands III Ueber Flohe der Ziesel und der Springmause unter Berucksichtigung der Verbreitung der Pesterkrankungen in den Wolga-Steppen [**Suslik and Jerboa Fleas; the Spread of Plague in the Volga Steppes.**]—*Rev Microbiol et Epidémiol* 1926 Vol 5 No 1–2 German summary pp 108–123 With 8 figs on 1 plate [1 ref] [In Russian pp 57–100 With 24 text figs]

Descriptions of some fleas found on certain rodents in South-east Russia with particular reference to those of the souslik (*Citellus musicus*) and jerboa (*Alactaga saliens*) The fleas found in the burrows of *Citellus musicus* are *Ceratophyllus tesquorum*, *Neopsylla setosa*, *Ctenophthalmus pollex* (n sp) and *Ct breviatus* (n sp), all of which are regarded as specific to the souslik, and *Frontopsylla* (n gen) *semura* (n sp) and *Oropsylla* (n gen) *ilovaiskii* (n sp), which are not so strictly specific The fleas of *Alactaga saliens* are *Ophthalmopsylla* (n gen) *volgensis* (n sp) and *Mesopsylla tushkan* (n sp) The descriptions in the Russian text are illustrated

A. A

EWING (H E) **A Revision of the American Lice of the Genus** *Pediculus*, **together with a Consideration of the Significance of their Geographical and Host Distribution.**—*Proc U S Nat Museum* 1926 Vol 68 Art 19 30 pp With 8 text figs and 11 figs on 3 plates [25 refs]

The author states expressly that the scope of this paper is restricted to material collected in America He recognizes two subordinate groups of the Linnean genus *Pediculus*, namely *Parapediculus* confined to American monkeys and *Pediculus* s s confined to man, and he is of opinion that the monkeys originally derived their lice from man.

Of the subgenus Pediculus he recognizes a single species, namely *Pediculus* (*Pediculus*) *humanus*, Linneus (*partim*), with 5 varieties distinguishable in America, namely (1) *nigritarum* of Fabricius, the type host of which is the African negro, *corporis* of DeGeer (=*vestimenti* of Piaget and *corporis* of Dalla Torre), *angustus* of Fahrenholz, type host the Japanese race', *americanus* a new variety, the type host American Indian mummies, and *humanus* [*Pediculus* (*Pediculus*) *humanus humanus*, Lin =*capitis* of Piaget and of Dalla Torre] of which 'by a process of elimination the Caucasian race has become type host" In distinguishing the various forms included in the genus Pediculus characteristic features are detected in the form of the pleural plates, the size and shape of the thoracic spiracles, the size of the dorsal thoracic macrochaetae, the relative length of the antennal segments, and the chaetotaxy of the thumb of the 1st pair of legs of the male

In his extensive bibliography the author has overlooked the important paper (*Trans Roy Soc Edinb*, Vol xxii, 1861, p 567) in which Andrew MURRAY drew attention to races of Pediculi severally corresponding with races of man.

A A.

DELANOË (G.). La phtiriase des cils à Mazagan. **[Phthiriasis of the Eyelashes in Morocco.]**—*Arch. Inst. Pasteur d'Algérie.* 1925. Dec. Vol. 3. No. 4. pp. 431–433.

Crab-louse infestation of the eyelashes is extremely common among the poor Jews, both young and old, of Mazagan, but does not occur among the Arabs. The author's treatment is, after application of cocaine, to evert the eyelids and wipe them with a swab of cotton-wool soaked in grey oil; any insects that still adhere to the eyelashes after three or four wipes can be removed with a depilating forceps.

A. A.

FRANCHINI (Giuseppe). Osservazioni entomologiche sulle colonie italiane. Nota IIa. **[Entomological Notes from the Italian Colonies.]**—*Pathologica.* 1926. May 15. Vol. 18. No 415. pp. 246–247.

A note on some small collections of medical entomology sent to the School of Colonial Pathology attached to the Medical Department of the University of Bologna by medical officers of the Italian colonies in Africa.

A. A.

TOLDT, Jr. (K.). Ein typischer Herd von Menschen befallenden leptusartigen Milbenlarven in Niederösterreich. **[A Typical Nidus in Lower Austria of the Leptus Larvae troublesome to Man.]**—*Wien. Klin. Woch.* 1926. July 29. Vol. 39. No. 31. pp. 890–893.

There is nothing new in this account of the familiar "harvest mites" (larvae of Trombidium) that cause such distracting itching among dwellers in the country in the hot months. Perhaps the most interesting item is the following quotation from Gilbert WHITE :—

> "There is an insect with us, especially in chalky districts, which is very troublesome and teasing all the latter end of the summer, getting into people's skins, especially those of women and children, and raising tumours which itch intolerably. This animal (which we call an harvest bug) is very minute, scarce discernible to the naked eye, of a bright scarlet colour, and of the genus acarus . . . Warreners, as some have assured me, are much infested by them on chalky downs, where these insects swarm sometimes to so infinite a degree as to discolour their nets and to give them a reddish cast; while the men are so bitten as to be thrown into fevers."

A. A.

WURM (H.). Ueber eine Milbenerkrankung der Lunge bei *Macacus rhesus.* **[Mite Infection of the Lungs in** *M. rhesus.*]—*Cent. f. Bakt.* I. Abt. Orig. 1926. June 7. Vol. 98. No. 7-8. pp. 514–521. With 6 text figs. [4 refs.]

Pneumonyssus is a genus of Gamasid mites that infests the lungs of monkeys Along with a description and illustrations of the lesions caused by them in the bronchi and peribronchial tissues of their hosts, the author gives a series of figures of characteristic structures of the four several species already known, and a description of a fifth (new) species with figures exhibiting its diagnostic specific characters.

A. A.

BOGEN (Emil). **Arachnidism. A Study in Spider Poisoning.**—*Jl. Amer Med. Assoc* 1926. June 19. Vol. 86 No. 25. pp. 1894–1896.

From the author's statement that *Lathrodectes mactans* "is probably the only poisonous spider in the United States," it is to be inferred that the serious aspects of spider-bite reviewed in this paper are to be attributed to that species The author speaks of 150 cases recorded in the U S A. and of 15 additional cases in his own experience in California. In 10 of these latter cases the patient was bitten when at stool in an out-door privy. Local reaction was slight

"Constant findings are a history of a bite by a black spider, followed by excruciating pain mainly in the legs and abdomen, extreme abdominal rigidity, high blood pressure, elevation of temperature and a polymorphonuclear leucocytosis Large doses of opiates and the application of heat are our main symptomatic remedies, but convalescent serum seems to be of specific therapeutic value"

The author does not give any reference to records of experimental work on spider venom

A A.

HOUDEMER (M E) Note sur un myriapode vésicant du Tonkin, *Otostigmus aculeatus* Haase [**A Blistering Myriapod from Tonkin.**]—*Bull Soc Path Exot* 1926 May 12 Vol 19 No 5 pp 343–344

Several species of Myriapods are known to emit a phosphorescent cutaneous secretion according to the author this phosphorescent secretion of *Otostigmus aculeatus* is also vesicant

A A

NEDERGAARD (Niels) **Venomous Jelly Fish.**—*Med Jl Med Assoc. Siam* 1925 Dec Vol 8 Pt 3 pp 10–13

The author does not refer at all to the rather considerable literature of this subject and we give his unsophisticated summary for what it is worth —

"Jelly fish of the brown variety encountered along the coast of the Gulf of Siam emit a virulent poison This poison appears to be contained in certain cells on the fronds and body of the jelly fish These cells are capable of independent existence in sea water, as flagellates Actual contact with a jelly fish is not a necessary condition for receiving a burn. Only jelly fish in normal health carry this poison in dangerous amounts. Aside from the immediate application of a mild alkali, like common soda, and protection later against infection and irritation, all vigorous treatment of the burn is useless, and may be harmful"

A A.

ALLNUTT (E B) **The Effects of a Sting by a Poisonous Coelenterate.**—*Jl Roy Army Med Corps* 1926 Mar Vol 46 No 3. pp 211–213

A good account from Bermuda of the stinging effects of what was almost certainly a "Portuguese man-o'-war'" (Physalia). The victim was just able to struggle back to the board, whence he had dived into deep water, and then he collapsed Brought to hospital a few minutes afterwards he was writhing in pain referred to the lumbar region, the head was retracted and all the muscles of the trunk and limbs were in a state of rigidity, and there was dyspnoea, afterwards described as feelings as of impending suffocation. In his throes the victim tore his bed-clothes into pieces. This state of excitement lasted about an hour, the face being flushed but the temperature normal, and the pulse quickened (100) but good. Wheals as from a lash radiated over the abdomen, thighs, and flexor surface of the arms. Within three hours of the accident breathing was normal, and the lumbar pain was gone, but there was still burning pain along the wheals. The wheals were visible, though not painful, two or three days afterwards

When, after the first agonies, the victim became coherent he explained that he had dived into a tangle of adhesive filaments of a large purple globous fish. His comrades, who picked off the filaments as soon as he had struggled out of water, were also stung, but the effects were localized.

The usual local and general treatment for soothing pain and local irritation was followed.

A. A.

HARTY (A H) **A Case of Cobra-Bite.** - *Indian Med. Gaz.* 1926. Apr. Vol. 61. No. 4 pp. 178–179

A mental hospital patient having got hold of a cobra 3 feet 7 inches long made a lively use of it against his fellow inmates and the staff for about twenty minutes When he let go of it he had been bitten in two places in the hand, and his first act was to sit down and vomit. A tourniquet was applied above the elbow, the bites were incised and cauterized with solid $KMnO_4$, and 40 cc. of antivenene was injected intravenis; another 10 cc. was injected 50 minutes afterwards, and another 40 cc. 2¼ hours after that Saliva became viscid about half-an-hour after beginning of treatment, ptosis and thick speech 55 minutes after, weakness of legs an hour-and-a-half after, difficulty of swallowing an hour and fifty minutes after, staggering gait two hours after. Improvement of speech and ability to swallow began 4½ hours after beginning of treatment, speech became quite distinct 7½ hours after, and general improvement was rapid thereafter.

The wounds on the hand sloughed [but there is no evidence that this was the result of the venom rather than of the solid $KMnO_4$].

An interesting fact is that the man's mental condition is greatly improved, so far.

A. A.

RAJU (K. V.). **A Case of Recovery after Bite by a Russell's Viper.**—*Indian Med. Gaz.* 1926. Apr. Vol. 61. No. 4. p. 179.

The patient in this case was bitten on the ankle by a Russell's viper 2½ feet long. When admitted to hospital 15 minutes afterwards "he was far from optimistic." He had some symptoms of shock and there was acute pain at the bite and a tingling and feeling of weight in the whole leg. The bite was incised immediately and cauterized with pure carbolic acid, and 35 cc. of Kasauli antivenene was injected intravenis. The patient felt better in every way 2¼ hours after treatment, but complained extremely of pain in the back; he was shivering and had a temperature of 101° F. Some local swelling and oozing of haemolysed blood occurred, but gangrene did not supervene. [No mention is made of any haemorrhages]. On the third day after being bitten, the patient was much improved; on the fourth day he became an out-patient of the hospital, and on the thirteenth day his wound was completely cured. As the author remarks, it is fairly certain that the patient did not receive a large dose of venom.

A. A.

DE CASTRO (A. Bayley). **A Case of Snake-Bite due to** *Lachesis cantoris.*—*Indian Med. Gaz.* 1926. Mar. Vol. 61. No. 3. pp. 123–124.

A convict in the Andaman Islands, bitten in the third interdigital fold of the right hand by a *Lachesis cantoris*, and brought to hospital 20½ hours afterwards. In the interval he had suffered a night of excruciating pain, and had had some vomiting. When examined, the whole right arm was tensely swollen and there were bullae along the course of the ulnar nerve to the brachial plexus. Pain, from fingers to neck, persisted until about the 33rd hour after the infliction of the bite. At about the 26th hour, much flatulence and eructation was noticed. There was no haemorrhage and no subsequent sloughing. The swelling began to subside on the fourth day. The local treatment was incision and ablution with $KMnO_4$ solution, followed by antiseptic dressings. The special treatment was by intravenous injections of $CaCl_2$.

A. A.

ANDERSON (L. A. P.). **A Case of Snake-Bite treated with Antivenomous Serum.**—*Indian Med. Gaz.* 1926. Jan. Vol. 61. No. 1. pp. 19–20. With 1 text fig.

The victim was a robust hillman of 35 years and the snake a Russell's viper 2½ feet long. The bite was on the first phalanx of the left forefinger, and one of the two punctures was a " linear cut, the result of dragging off the snake." The man came for treatment straightway, bringing the live snake with him, and received 80 cc. of Kasauli antivenene intravenis at once—about half an hour after getting bitten—the punctures being treated with iodine and dressed. Before receiving the antivenene, he had been pale and shocked, and the finger was considerably swollen; after it he vomited at intervals for an hour, and during the first 15 minutes passed 4 or 5 liquid stools, and there was marked oedema of the hand and pain up to the axilla. A second injection of antivenene was given 85 minutes after the first. Except that the man was thirsty, and occasionally drowsy, he received no other special treatment. As soon as his safety was assured he was sent off to hospital, whence he was discharged, with some oedema of the back of the hand still remaining, in 4 days. It is admitted that " it is not possible to be sure that the patient had received a lethal dose of the venom."

A. A.

FERGUSON (E. W.). **Cases of Snake-Bite in New South Wales.**—*Rep. of Director-General of Pub. Health New South Wales for Year 1924.* pp. 171–184.

The greater part of this paper is occupied by a tabulated record of 159 cases of snake-bite, with 47 deaths, that were reported officially in

New South Wales from 1906 to 1924 inclusive. The table contains details of locality, of the individual bitten, of the part bitten, of the circumstances of the accident, of the size and the "popular" name of the snake, of the imprint of the teeth, of the treatment given, of the condition of the patient when brought for treatment, and of the result. It is not supposed that the reported cases are a complete record of all the accidents that occurred. The snakes responsible for accidents were, of course, not always venomous species. Of the truly venomous snakes, the species chiefly responsible were, *Pseudechis porphyriacus* ("black snake"), *Diemenia textilis* ("brown snake") and, less often, *Notechis scutatus* ("tiger snake").

A. A.

KRAUS (R.). Zur Serumtherapie der Bisse durch europäische Vipern. [**Serum Therapy of Bites by European Vipers.**]—*Wien. Klin. Woch.* 1926. June 24. Vol. 39 No. 26. pp. 744–745.

From neutralization experiments here tabulated the author draws the conclusion that the anti-bothrops-serum (mono- and polyvalent) so effective against the venom of South-American Viperidae will be found equally effective in the treatment of the bite of the European vipers.

A. A.

FURUTAMA (T.). Ueber die Wirkungen des Schlangengiftes auf Bakterien und Komplement. [**The Action of Snake Venom on Bacteria and Complement.**]—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1926. Jan. No. 250. German summary pp. 1–4. [In Japanese.]

From the German summary, which gives merely the results of experiments, this appears to be an extremely technical paper dealing not merely with the haemolytic and bacteriolytic interactions of certain snake-venoms and the fresh serum of various animals, but also with the mechanism—if one may introduce so gross a term into such an intangible sphere—of such interactions. The specific venoms studied were from 4 species of Lachesis, an Ancistrodon, a krait, and a cobra.

A. A.

BILLARD (G.). Pouvoir "anagatoxique" du sulfate de spartéine sur le venin des vipères d'Auvergne (*Vipera aspis*). [**"Anagotoxic" Power of Sulphate of Sparteine on the Venom of** *Vipera aspis*.]—*C. R. Soc. Biol.* 1926. Mar. 19. Vol. 94. No. 10. pp. 650–652. [2 refs.]

It is known, says the author, to the shepherds of the Auvergnes that sheep browsing on broom (Genista) become what they call "benumbed," and in that state are refractory to the venom of the viper. It is easy, says he, to produce the same state experimentally in a guineapig with sulphate of sparteine (a base obtained from broom). A guineapig of 700 gm. that had received a subcutaneous injection of 1·5 cc. of a 3 per cent. solution of that salt, withstood a peritoneal injection, more than 18 hours afterwards, of 6 mgm. of viper venom—an amount of venom that killed a control guineapig in 90 minutes. This property of sparteine is by the author styled "anagotoxic": it may be anagogue to the animal, but it is catagogue to the toxin.

A. A.

CLARK (H. C.). **Snakes of the Ulua River Valley [Honduras] (Cultivated Portion of the South Bank in the Lower Basin).**—*Fourteenth Ann. Rep. Med. Dept. United Fruit Company, Boston, Mass.* 1925. pp. 286–297. With 1 fig.

A survey of a tract of about 50,000 acres, of which an area of 2,500 acres was in process of clearing and the rest had been recently planted, resulted, in the course of fourteen months, in a collection of 3,438 specimens of snakes, of which 3,109 have been identified. Of these, 3,109 specimens, 541 are venomous and include 312 specimens of *Lachesis atrox* (Fer de Lance), 12 of *Lachesis brachystoma*, 10 of *Lachesis schlegelii* (horned palm-viper), and 207 of *Elaps fulvius nigrocinctus* (a "coral" snake).

A. A.

BARDIER (E.) & STILLMUNKÈS (A.). Syncope adrénalino-chloroformique et envenimations. (Venins de vipère et de scorpion). **[Viper and Scorpion Venoms: their Action on Adrenalin.]**—*C.R. Soc. Biol.* 1926. Apr. 30. Vol. 94. No. 14. pp. 1063–1064. [1 ref.]

Notwithstanding that scorpion-venom is hypertensive and cardioretardant and viper-venom hypotensive and cardioaccelerant, they both exercise an apparent physiological neutralization upon adrenalin.

A. A.

MITRA (P. N.). **A Case of Hirudiniasis of the Male Urethra.**—*Indian Med. Gaz.* 1926. Jan. Vol. 61. No. 1. p. 22.

A small boy, in the state of nature, was fishing when he noticed a leech entering his urethra. He tried to pull it out, but it managed to get away into his bladder. When he was brought to hospital, blood was dripping from the meatus. The bladder was emptied (of blood and urine), washed out, and then charged with some strong salt solution and adrenalin, which was left in for the night. Next morning, micturition being impossible, bloody urine was again withdrawn by catheter, and the bladder again charged with salt and adrenalin solution. It was not until the third night—the treatment being continued the while—that the leech, then dead, was expelled, with violent pains. The dead leech was 4 inches long and half an inch broad.

A. A.

CARPENTER (G. D. Hale) with an Appendix by POULTON (E. B.). **Speke's Tragelaph on the Sese Isles of Lake Victoria.**—*Proc. Zool. Soc.* London. 1925. Pt. 4. pp. 1423–1430. With 1 plate & 1 text fig.

This paper has two instructive aspects. First, it has an admonition for the sanitary reformer, in illustrating the repercussive effects of interference with the balance of an established natural environment—and this is its chief interest for us.

After the outbreak of the great epidemic of sleeping-sickness in Uganda the inhabitants of the Sese Archipelago in Lake Victoria were translated; the islands therefore gradually went back to jungle and the situtunga or swamp-buck (Speke's Tragelaph), exempt from persecution by man, greatly flourished. When, subsequently, in 1912–1913, the author visited the Archipelago, and lived in the island of Bugalla, he found that the situtunga had changed in habits from a swamp-buck to a bush-buck and would spend the day in the heavy forests bordering the lake, and the evening in grazing on the open grasslands. Another observer (FISKE) who visited another island (Nkosi) during the war, found that there, too, the swamp-buck had become very plentiful and had adopted the habits of a bush-buck, and had cut regular lanes through the dense undergrowth of the forest.

In March 1925 the author revisited Bugalla and found that the buck had now destroyed all the undergrowth except one particular plant that they seemed to dislike, and that this destruction of the undergrowth was coincident with remarkable changes in the insect fauna Butterflies that had been common in 1912–13 had now disappeared, and catches of *Glossina palpalis*, which in 1912–13 had averaged 36 flies per fly-boy per hour, were now reduced to catches of 10 per hour In Nkosi, which the author visited in April 1925, the buck had completely cleared the undergrowth, ants had enormously increased in number, and only 2 specimens of *Glossina palpalis* were taken Though he did not see that island himself, the author states that similar destruction of undergrowth is said to have been wrought by situtunga in the forest-clad island of Damba And on other islands of the Archipelago varying degrees of change are seen

Apart from the changes in the flora and insect fauna of the islands consequent on the increase of the situtunga and its change of habits, as a result of the withdrawal of the human population, remarkable structural changes have come about in the situtunga itself, its feet and horns have reverted to the bush-buck type, and so pronounced are these changes in the Nkosi island stock that zoologists have given it the rank of a subspecies This is the second interesting fact described in the paper

A A

RIDING (D) **A Case of Porocephalosis.**—*Ann Trop Med & Parasit* 1926 Feb 11 Vol 20 No 1 pp 143–144 With 2 figs on 1 plate

Notes the finding of encysted larvae of *Porocephalus armillatus* in liver and submucosa of duodenum at a *post-mortem* examination of a subject whose lungs were in an advanced state of tuberculosis

A A

DAVIS (Nelson C) Notes on the Female Hypopygia of Anopheline Mosquitoes, with Special Reference to some Brazilian Species —*Amer Jl Hyg* 1926 Mar Supp Vol 6 pp 1–22 With 38 text figs [12 refs]

JOYEUX (Ch) Traitement et prophylaxie des maladies parasitaires d'après les travaux récents —*Le Bull Méd* 1926 Jan 27, 30 Vol 40 No 5 pp 121–128

LABORATORY REPORTS.

NIGERIA. **Annual Report of the Medical Research Institute, Lagos.** [CONNAL (Andrew), Director.]—*Ann. Med. & San. Rep. Nigeria 1924.* Appendix I. 45 pp.

For the first time in recorded history an epidemic of Plague occurred in Lagos (but not in Iddo and Ebute Metta); it covered the latter half of the year under report. No evidence of any preceding epizootic had been observed, although in the 4 months before the epidemic over 300 rats had been examined. It is significant, however, that previous to the epidemic sudden deaths had occurred among the natives, in which examination at the public mortuary had revealed broncho-pneumonia with a large and varied confederation of micro-organisms in smears, sections, and cultures. During the epidemic the causative agent in most cases was the typical *B. pestis*; but in both the earlier and the later cases the bacilli, which were admixed with other species, were few and atypical, and in the later cases it was in some instances difficult, or even impossible, to isolate the *B. pestis* on nutrient agar. These facts in the author's opinion seem to offer some support to Norman WHITE's theory of two types of the bacillus, respectively responsible for bubonic and pneumonic plague Experiments are described showing that a lung infection can be caused in guineapigs by inoculating material from a bubo into the scarified skin of the abdomen. Another noteworthy laboratory observation was the presence of *B. pestis* in the peripheral blood in a case of septicaemic plague in a native. Another notable observation was that in certain cases of plague the distribution of the bacillus in the spleen was focal, not general

An epizootic of rats occurred at Iddo (where, however, there was not any plague in man) but not at Ebute Metta At Lagos the epizootic figures corresponded very closely with those of the epidemic in man, a rise in the total rat figures usually preceding by one week a rise in the human cases. The rodents—identified by specimens sent to the British Museum of Natural History were *Mus rattus, norvegicus, musculus,* and *Cricetomys gambianus.* Of these *rattus* and *musculus,* in about equal proportions, made up 86 per cent. of the total number of "small deer" (13,147 rodents and *Crocidura manni*) caught at Lagos.

The fleas collected, chiefly from dead rats, were *Xenopsylla cheopis* and *brasiliensis,* the former preponderating, particularly in the two worst months of the epidemic.

Details are given of a number of Asylum cases of Leprosy in which apparent cure, or considerable improvement, followed treatment with chaulmoogra oil or its derivatives.

Reports of 14 cases of Black Water Fever are analysed. all in male Europeans ranging from 22 to 49 years of age, 8 cases being fatal. All 14 had suffered from malaria, all are described as "careless"—negligent of the usual methods of avoiding mosquitoes and malaria, and inattentive to treatment. In no case could the occurrence of blackwater be attributed to overdoses of quinine. The duration of haemoglobinuria ranged from 36 to 252 hours in the 6 cases that recovered, and from 48 to 170 hours in the 8 fatal cases. Of the victims in the fatal cases, 1 was in his first tour of service, 3 were in their second tour, 1 was in the third, 1 had served five tours, 1 was in his seventh tour, and 1 in his eighth. Of the actual causes of death, 5 were suppression of urine and 3 were syncope.

Of 36 tumours received for histological diagnosis 25 in native Africans were malignant: Carcinoma, 2; adenoma, 3; epithelioma, 6; fibrosarcoma, 4; round-cell sarcoma, 3; myxosarcoma, 2; spindle-cell sarcoma, 4; melanosarcoma, 1.

The Entomology Department was in charge of Mrs. SUMMERS CONNAL, M.B.E. Besides routine identifications for medical and sanitary officers, a systematic survey of blood-sucking flies and their endoparasites was carried on, in the course of which 266 biting flies of various species were dissected for filaria, and 426 mosquitoes of various species, collected in native huts, for determination of their endoparasites. The things found were spironema, active amoebae, and ascaris ova in the stomach, and spironema and sporozoite-like bodies in the salivary glands, of different specimens of *Taeniorhynchus africanus*; a small nematode in the stomach of a *Culex rima*; and zygotes in the stomach-wall, and filaria larvae in the thoracic muscles, respectively, in individual specimens of *Anopheles costalis*. An encysted nematode was discovered in 2 specimens of *Xenopsylla brasilensis* among 47 fleas dissected.

A. Alcock.

GOLD COAST. **Annual Report of the Medical Research Institute, Accra. From April 1st, 1924 to March 31st, 1925.** [YOUNG (W. A.), Director.]—*Gold Coast Rep. Med. & San. Dept. for Period Apr. 1924–Mar. 1925.* Appendix A. pp. 42–60.

From this careful and comprehensive record the following items of general interest may be extracted:

At a post-mortem examination of a European dead of blackwater fever, the state of the kidneys attracted particular attention; they were enlarged and congested and, microscopically, there was considerable increase of fibrous tissue and the cells lining the convoluted tubules showed various degrees of degeneration and even disintegration. Such a state of chronic parenchymatous nephritis, occurring (as in this instance) in a subject having a history of repeated attacks of malarial fever over a number of years and of aversion to quinine, points the author to the conclusion that malaria must have a direct effect upon the kidney.

An account of a trypanosomiasis expedition in the Volta basin has already been noticed in this *Bulletin* (*ante*, p. 290). The author repeats the conclusion that sleeping-sickness is not rare in Ashanti, but that it is " undoubtedly chronic " and that probably many spontaneous recoveries occur.

Plague also appears to be endemic. Four cases came to notice during the year; 2 of them with lung symptoms (one of which recovered) are thought not to have been pneumonic plague. Infected rats also came to light, but not in Accra itself, and the author again remarks on " the chronicity and comparative non-virulence of *B. pestis* as seen in the Gold Coast rat." *X. cheopis* and *Ctenocephalus felis* occur on local rats, but the prevalent local rat-flea is *X. aequisetosus*.

Five certain cases of yellow fever were brought to notice—all fatal. In 2, where the onset was known and the organism could be looked for opportunely, no evidence of leptospira could be elicited by any method tried.

In the 249 microscopic examinations of tissue 3 cases of carcinoma (parotid, penis, bladder with metastasis in liver) and 12 of sarcoma were observed; and in 192 microscopic examinations of urine 1 case of Bilharzia ova.

In 105 cases where sputa were examined *ad hoc*, tubercle bacilli were found in only 2; in the general record of post-mortem examinations (154 bodies) evidence of tuberculosis was found in 10 cases (lungs 6, brain 1, generalized 4).

As evidence of a progress that may fairly be regarded as irresistible, 8 post-mortem examinations were due to motor-cars.

A. A.

ANNALES DE LA SOCIÉTÉ BELGE DE MÉDECINE TROPICALE. 1926. Jan. Vol. 5. No. 2. pp. 141–169.—Rapport sur le fonctionnement du Laboratoire de Léopoldville pendant l'année 1924. **[Leopoldville Laboratory Report for 1924.]**

The main of this report deals with matters of routine. The following items may be of general interest.

1. Observations on trypanosomiasis: "*Bayer 205*" is a powerful trypanocide especially by intravenous administration; its action is slow, but lasting; in later stages of the disease its action is not better than atoxyl, and the mortality among cases treated during 16 months was 48·1 per cent.; intrarachidian injection in a dose of 0·3 gm. was fatal, and intrarachidian administration of "serum au 'Bayer 205'" had no advantage over the intravenous method; various cutaneous eruptions and renal irritation may follow the use of "Bayer 205." Ninety chronic cases treated with *tryparsamide* showed results distinctly better than any observed with other trypanocides *Bismoxyl* seems to be not a trypanocide *Stovarsol,* even in daily doses of 3 gm. up to a total amount of 54 gm., proved to be but a slow and transient trypanocide.

2. Observations on yaws: *Stovarsol* is the remedy of choice; the customary dosage has been from 1 to 3 gm. for adults, and from 0·5 to 1 gm. for children, and these doses have been tolerated well; after a total amount of 8 to 15 gm. (in adults) the Bordet-Wassermann reaction is negatived in most cases; stovarsol of course is more expensive than novarsenobenzol, but cost is saved in the simplicity of its administration. *Bismoxyl* acts energetically on yaws (as on syphilis) and has kept its efficacy in the tropics; intramuscular injections may be very painful.

3. Observations on amoebic dysentery: Stovarsol used in 8 cases seemed to be beneficial only in 2; in 2 others there was à speedy relapse, and in 4 the amoebae did not disappear from the stools.

4. Culture of various bacteria under a cap of "viscose" (a vegetable parchment fabric) has given very satisfactory results, even in the case of the meningococcus.

5 A general experiment in prophylactic vaccination was made on the occasion of an outbreak of cerebrospinal meningitis; the outbreak was localized, and from the 4th June to the 8th August 23 cases had occurred—13 meningococcic, 10 pneumococcic; by the 8th August vaccination of the entire local population was completed; subsequently, between the 24th August and the 4th December, 19 cases occurred (6 meningococcic and 13 pneumococcic); of the 6 meningococcic 3 had been vaccinated and all 3 recovered after a mild attack; the vaccine

was a local strain of species A. A general experiment with an entero-vaccine was made in an outbreak of dysentery, but the results are stated to be inconclusive; among 500 individuals vaccinated, in one part of the area involved, no case occurred during the month immediately following vaccination, and among 500 individuals *not* vaccinated, in another part of the same area, 16 cases occurred during the month immediately following vaccination.

6. In the medical school for Natives there were 3 third-year, 4 second-year, and 2 first-year students.

7. To the tuberculosis infirmary 42 patients were admitted during the year.

A. A.

KENYA, Colony & Protectorate of: **Annual Report of the Bacteriological Laboratory for the Year 1923.** [KAUNTZE (W. H.), Senior Bacteriologist.]—*Ann. Med. Rep. for the Year ending 31st December, 1923 Colony & Protectorate of Kenya.* pp. 109–126.

The recent reorganization of the Kenya Bacteriological Department is here described. The main changes are: (1) The affiliation of the Medical Division of the Chemical Research Department; (2) the institution of a distinct Research Division, the staff of which is to be exempt from all routine work, except supervision of the preparation of plague and variola vaccines; (3) the entertainment of a Biochemist, and (4) the formation of an Entomology Division. The following generally-interesting items of the Report may be noticed.

In the routine of serum examinations *Bacillus paratyphosus* C has been detected, for the first time in Kenya; *Micrococcus paramelitensis* has also been observed, and from several localities *M. melitensis*, so that undulant fever appears to be widespread in the colony. The helminth infestations noticed are hookworm, *Ascaris lumbricoides*, *Trichuris trichiura*, *Strongylus stercoralis*, 1 case of *Schistosoma mansoni* and 1 of Hymenolepis. Among 65 tumours examined in the pathological laboratory there were a round-cell sarcoma, a melanotic sarcoma, 2 carcinomas of the eyelid, a carcinoma of the breast, and a cavernous haemangioma—all in natives.

Contamination of the Nairobi water-supply was traced to a concealed spring that opened into the bottom of the reservoir. In the examination of milk from a large dairy-farm at Nairobi, the following interesting determinations were made of the number of *B. coli* per cc. in different samples of the milk: (*a*) direct from the cow, under 100; (*b*) from a can in the dairy, over 10,000; (*c*) after pasteurization, under 100; (*d*) after cooling, under 100; (*e*) delivered in the laboratory in an insulated, airtight, dustproof, one-gallon can, subsequent to pasteurization on the previous day, under 100; (*f*) delivered in the laboratory in an uninsulated but airtight and dustproof five-gallon can, subsequent to pasteurization on the previous day, 100 to 1,000; (*g*) exactly as *f*, but a one-gallon can, neither airtight nor dustproof, over 10,000.

The number of doses of calf-lymph issued during the year was 135,062. The percentage of successful primary vaccinations ranged from 100 (in 4 districts) to 59·4 (in one district) and averaged 88·2 for the entire Province.

A. A.

TANGANYIKA TERRITORY. **Report of the Dar-Es-Salaam Laboratory for the Year 1924.** [LESTER (A. R.), Director.]—*Tanganyika Ann. Med. Rep. for Year ending December 31st, 1924.* pp. 197–216. With 4 charts.

The following items from this comprehensive report may be of general interest.

The prevalent type of malaria is subtertian ; of 1,063 positive blood-films only 39 showed benign tertian. Of 3,939 blood-films examined during the year 142 (3·6 per cent.) contained microfilariae, all but 8 being in the day blood, although both Calabar swellings and Chrysops are rare. Of 32 blood-films and gland-smears examined *ad hoc,* 11 contained trypanosomes. In consequence of the previous year's reports of cases of undulant fever, agglutination tests for *B. abortus* were pursued through the greater part of this year, without a single positive result. Of 211 sputa examined *ad hoc*, 42 were positive for the tubercle bacillus, namely 31 native African, 10 Asiatic, and 1 European.

Microscope examinations of 1,180 stools disclosed Ancylostoma in 354, Ascaris in 7, Trichuris in 23, Strongyloides in 50, *Taenia saginata* in 75, *Schistosoma mansoni* in 3, *Entamoeba histolytica* in 7, other amoebae in 32, and Flagellates in 57 An entire guineaworm was found coiled in a hernial sac in the course of a surgical operation ; it was kept alive in the laboratory for 12 days after removal.

" A curious feature of the so-called mango season was the influx of a number of stools consisting mainly of mucus from which . . . . no other organism than *B. coli communis* could be isolated on Conradi medium."

Cordylobia anthropophaga, the Tumbu fly, was identified in the mango season. A Tipulid fly said to be plentiful after the rains was accused of causing irritating bites. An English woman and child died within four hours of eating the roe of a globe-fish (*Tetrodon* sp.) known in the vernacular as *bunju*.

In the water reports, reference is made to an indefinitely-persistent opalescence of water containing in suspension very finely divided silica , the suspension is precipitated by alum and by lime.

Of antivariola lymph 173,550 doses were distributed—glycerinated lymph made after the Hendon method, its potency being maintained by alternate transmission between calf and monkey at intervals of a week.

A. A.

SERGENT (Edmond). Rapport sur le fonctionnement de l'Institut Pasteur d'Algérie en 1924. [**Report of the Pasteur Institute, Algeria, for 1924.**—*Arch. Inst. Pasteur d'Algérie.* 1925. Mar. Vol. 3. No. 1. pp. 69–98. [50 refs.]

This annual report for 1924 should satisfy the most voracious appetite. Altogether 9,449 analyses were made, of which 6,771 were bacterial and medico-microbiological. 1,963 persons were treated for rabies, with a mortality of 0·05 per cent. ; dogs were responsible in 931 cases and cats in 116. Malaria was light generally, owing to a dry spring ; very methodical quininization was the chief antimalaria policy, but local anti-larva measures were enforced, and service-buildings in malarious places were screened. (Big antimalaria works are in the hands of the Department of Roads and Bridges). Medical and Veterinary officers received technical instruction, and Mrs. H. A. ADIE carried on and successfully completed her investigation of the life-history of *Haemoproteus columbae.* The scientific work of the staff is noticed in this *Bulletin* as it is published; the following summary illustrates its scope: Malaria, 8 publications epidemiological, prophylactic, and experimental; Oriental sore, 3, epidemiological; undulant fever, 1, serological; tuberculosis, 6, epidemiological; trachoma, 3, epidemiological and prophylactic; general biology, 2; pathology, 2; toxicology, 2; bovine piroplasmosis, 6, general and experimental; animal trypanosomiasis, 7, various; other diseases of animals, 3; protozoology, 1, mycology, 2; medical entomology, 4. The scientific exploration of the Saharan oasis was continued.

A. A.

ARCHIVES DE L'INSTITUT PASTEUR DE TUNIS 1925. Apr. Vol. 14. No. 2. pp. 224–245. Fonctionnement des services de l'Institut Pasteur de Tunis pendant l'année 1925. [C. N.] [**Work of the Pasteur Institute of Tunis in 1925.**]

Nearly half this report is taken up by a statement of the antirabic service, and nearly half of this, again, is a righteous homily upon a people that accepts gratuitously an expensive form of treatment for an easily avoidable disease which it takes not the slightest heed to foresee and check, the writer freely expressing his desire to have the people brought to their senses by appropriate enactments. The number of individuals applying for treatment during the year, was 1,617, of which 1,166 were actually treated—218 being cases of very severe bites. Of those treated, 3 died. The animals responsible were dogs, in 1,030; cats, in 80; horses, in 14; asses, in 12; rats, in 9; mongoose and mice, in 2 each; camel, cow, fox, jackal, mule, in 1 each; and 12 cases were "from contamination by 5 untreated men suffering from rabies."

Of antivariola vaccine, 371,832 doses were distributed, and of various other specific vaccines nearly 20,000 doses; of antitoxins (including only those prepared in the Institute) over 2,750 flasks. Summaries of the various examinations and analyses—microscopic, cultural, serological, chemical, etc.– are given.

A. A.

MAURITIUS. **Report on the Work done at the Bacteriological Laboratory for the Period October 1924 to September 1925.** [BARBEAU (L. G.), Supt. Bact. Laboratory, Reduit., Dec. 14, 1925.]—5 pp. F'cap. [Unpublished Report enclosed in Mauritius Despatch No. 6. of 7-1-26. Received from the Colonial Office, Mar. 3, 1926.]

This is a good record of a comprehensive routine. The following items may be of general interest. All three species of malaria parasites occurred in the blood examinations. In the 773 specimens of faeces examined *Entamoeba histolytica* was detected in 58, *E. coli* in 97, Giardia in 101, Trichomonas in 32, Blastocystis in 66; *Trichuris trichiura* in 525, Ancylostoma in 74, Strongylus in 41, *Ascaris lumbricoides* in 22, Oxyuris in 4. Of 432 specimens of urine, 2 contained eggs of *Schistosoma haematobium*. Of 27 neoplasms examined 13 were malignant, and 1 bilharzial. Both stock and autogenous vaccines were prepared for local immunization by Besredka's method; but their application was limited to pyogenous organisms, where the results, especially in cases of puerperal sepsis have, so far, been encouraging. The medicolegal work of the year included investigations in 4 cases of murder, 2 of manslaughter, 21 of rape, 4 of unnatural offences, and 3 of poisoning.

A. A.

BOMBAY. **Report of the Bombay Bacteriological Laboratory for the Year 1924.** [MACKIE (F. P.), Director].—51 pp. With 2 charts. 1925. Bombay: Govt. Central Press. [Price. As. 7 Ps. 6 or 10d.]

The following items from an interesting report are extracted :—

Plague prophylactic. An additional safeguard has been introduced into the preparation of the seed material. Formerly the seed flasks were inoculated direct from the heart-blood of an infected rat; now the rat-blood is inoculated on to agar slopes, from which pure colonies of *B. pestis* are fished, and from these, after testing, the seed-flasks are inoculated; no contaminations have been detected in the flasks since this technique was adopted. Statistical evidence has been collected to show that storage up to 15 months does no detriment to the immunizing power of the prophylactic. As the result of a comprehensive series of experiments a definite relation has been shown to exist between the bactericidal power of the blood of rats and their immunity to plague; from which it is argued that "it should be possible to measure directly on man the protection likely to be afforded by various kinds of plague vaccines, the proper dosage to be employed, the duration of immunity, and the effect of re-inoculation"; these experiments have shown also that the bactericidal power of the blood is not an index of the total immunity, and therefore suggest the presence of an additional tissue-immunity outside the blood-stream.

Anti-rabies treatment. Of 1,100 persons who came forward 587 went through the complete treatment, and of these 7 (1·2 per cent.) died more than fifteen days after the completion of treatment.

Pharmacology. The therapeutic values of *Holarrhena anti-dysenterica*, *Butea frondosa*, and *Gymnema sylvestre*, three common indigenous trees of considerable repute, have been studied clinically and their chemical composition determined. The bark and seeds of the first are said to be specific in amoebic dysentery, effective in bacillary dysentery, of slight use in tuberculous diarrhoea, but inert in diarrhoea of sprue and other causation. *Butea frondosa* (gum and seeds) was found to be effective in tuberculous and post-dysenteric but not in other forms of diarrhoea, but did not justify its popular reputation as an anthelminthic. The leaves of *Gymnema sylvestre* were tried, and seemed to be efficacious in diminishing excretion of sugar, in two cases of diabetes.

Other Researches include bilharziasis and dracontiasis in their serological aspects and sprue in its biochemical, serological and conjectured mycological aspects. Dr. Bailey ASHFORD's association of a particular species of Monilia with sprue has not been confirmed in the course of a year's investigations.

A. A.

ASSAM. **King Edward VII Memorial Pasteur Institute and Research Institute, Shillong. The Eighth Annual Report for the Year ending 31st December, 1924.** [HODGSON (E. C.), Director.]—25 pp. 1925. Shillong: Govt. Press. [Price 12 annas—1s. 6d.]

This report consists mainly of statistics of the antirabic institute and financial details of administration.

The number of patients who underwent complete antirabic treatment during the year was 1,831, including 94 Europeans. The number of deaths from hydrophobia was 14 (0·76 per cent.—all Indians), of which 5 occurred more than 15 days after completion of treatment (=0·27 per cent. failure rate). Jackals were responsible for 17 per cent. of the cases bitten.

The number of cases of kala azar treated was 156, of which 138 were discharged cured and 5 died in the course of treatment. Spleen or liver puncture was done in all cases, both for diagnosis and for determining the results of treatment. Of the 156 cases, 113 were treated with urea stibamine, 13 by sodium antimony tartrate precedent to urea stibamine, 14 by von Heyden 471, 5 by glucoside stibamine, 4 by Brahmachari 201, and 14 by sodium antimony tartrate alone. Two cases, both ending fatally, were found to be resistant to antimony in all the forms tried; the first is said to have had more than 2 gm. of sodium antimony tartrate before admission, and afterwards received 4·2 gm. of urea stibamine, 5·6 gm. von Heyden 471, and 3 gm. of Brahmachari 201, and still remained positive by spleen puncture; the second, also said to have had 2 gm. of sodium antimony tartrate before admission, afterwards received 10·95 gm. urea stibamine and 1·25 gm. Brahmachari 201 and still retained his parasites.

A. A.

FEDERATED MALAY STATES **Annual Report of the Institute for Medical Research for the Year 1924.** [STANTON (A. T.), Director of Govt. Laboratories.]—*F.M.S. Ann. Rep. on the Med Dept. for the Year 1924* pp. 18–24.

In this lucid record of wide yet discriminative activity the following items are of general interest.

A new department for the prophylactic treatment of rabies has been opened. Carbolized vaccine containing 1 per cent. of nerve-tissue in 0·5 per cent. carbol saline is employed in the treatment of human cases, and for emulsification the tissue is forced through very fine wire gauze. Rabies, however, has not been prevalent, so that only 14 patients have had to be treated.

A form of typhus, novel to Malayan professional experience, has been investigated. There is no evidence that the disease is carried by lice, or spread by direct contagion from man to man; but a study of the incidence of the 18 cases discovered shows that 10 of the sufferers were keepers of cattle and 6 were soldiers from a camping ground that had been used for grazing cattle; the reasonable inference therefore is that the virus is spread by acarines—possibly, as MEGAW suspects for the Himalayan form of typhus, by ticks. The incubation stage in the 18 cases investigated has varied between 12 days and 3 weeks. The onset is sudden, with symptoms resembling influenza, the fever reaching its height (about 104° F.) on the 8th–11th day; in 13 cases the initial catarrh went on to bronchitis. A rash, in the form of a few purpuric patches, occurred in 12 cases, but was profuse and conspicuous only in 1 ; in one case it so closely resembled that of typhoid fever as to mislead diagnosis. The Weil-Felix reaction was positive in all. Six cases ended—a dramatic change for the better at the end of the 2nd week—by crisis ; 6 by quick lysis, and 6 by lysis. The fever was prolonged by broncho-pneumonia or by septic complications in 3 cases.

Other investigations carried on during the year have been on melioidosis, on the question of diphtheria in Malaya, on the incidence of typhoid in Malaya, and on cinchona derivatives.

In the histological department a case of blastomycosis has been noticed for the first time, the tumour being in a Chinese boy of 17 years, and 42 malignant tumours were specified—4 in Malays, 23 in Chinese, 13 in Tamils (Madrassis), and 2 in Europeans.

A. A.

ARCHIVES DES INSTITUTS PASTEUR D'INDOCHINE. 1925. Apr. No. 1. pp. 95–116.—Fonctionnement des services pratiques des Instituts Pasteur d'Indochine, en 1923 et 1924. [**Work of the Pasteur Institutes in Indo-China in 1923 and 1924.**]

These records summarize the routine work of the laboratories of Saigon and Nhatrang, that at Nhatrang being restricted to serology and animal microbiology in their veterinary applications.

At Saigon a special tuberculosis laboratory is proceeding with the necessary preliminary surveys ; a systematic examination of school children is being carried out and extended to the families of those that are found to be infected, and at the present moment the *dossiers* of 400 school children and examinations of 100 families have been completed. In the laboratory of animal pathology, it was discoveerd that the lungs of 25 per cent. of the young pigs slaughtered were tuberculous. An entomology laboratory has been started for the further study of malaria. The number of persons dealt with by the antirabic department was 887, of whom 668 underwent complete treatment ; of these, one died on the 21st day of treatment, and one 28 days and another 6 months after the end of treatment ; the offensive animals were dogs in 864 instances, monkeys in 7, and man, fox, and rats each in one instance. Of antivariola vaccine, 3,763,710 doses were distributed in Cochin-china, Cambodia, Annam, and Laos.

A. A.

CLARK (H. C.). **Laboratory Report of Tela Hospital.**—*Thirteenth Ann. Rep. Med. Dept. United Fruit Company, Boston, Mass., 1924.* pp. 173–186. With 1 fig.

The number of individuals admitted to this hospital in Honduras, as given in the summary of results of examinations for intestinal parasites, was 3,240.

The great practical problem continued to be Malaria. In a very extensive coastal area neither field sanitation against the mosquito nor screening are feasible, and the labour forces there are too migrant either for educational propaganda or for attempts at quinine prophylaxis. In the diagnosis of malaria a *very* thick film method is now practised and is vastly superior to the thin film in detecting light infections.

The ten chief causes of morbidity were, malarial fevers, 1,024 cases ; respiratory diseases, 379 ; external wounds and injuries, 306 ; venereal disease, 288, diseases of skin and cellular tissues, 286, puerperal, 188; dysentery, 142 (including 67 amoebic), tuberculosis, 52, nephritis, 24, diseases of circulatory system, 23

The ten chief causes of mortality were, lobar pneumonia, 36 deaths; external violence, 29, malarial fevers (and blackwater), 14, nephritis, 11, pyaemia and septicaemia, 6, tuberculosis, 6, typhoid fevers, 6, dysentery, 4, meningitis (primary, non-epidemic), 4, diseases of digestive system, 4 All the deaths from lobar pneumonia—36 deaths out of 94 cases— were of Central American natives and negroes, the heaviest incidences of cases were December (10) and January (11), April (18) and May (11), and August (11)

Among the surgical notanda were, cancer of the cervix, 2 cases, epithelioma (face, nose, etc), 3, sarcoma of lymph gland, 1

Among laboratory items may be mentioned the finding of malaria parasites in 11 of 32 placental bloods examined

All hospital admissions, 3,240 individuals, were examined for intestinal parasites, with the following results Hookworm, 1,586 infections, *Trichuris trichiura*, 1,926, Ascaris, 610, Oxyuris, 1, Strongyloides, 9, Cestodes, 11, *Entamoeba histolytica* 96, *E coli*, 9, *E nana*, 2, *Balantidium coli*, 1, Flagellates, 71 (reported on by HEGNER, and already noticed in this *Bulletin*, Vol 22, p 839)

No cases of filariasis occurred, although animal filariasis is common, and no case of relapsing fever Beriberi, pellagra, and dengue are very rarely encountered, and only 2 cases of leprosy, both in West Indian negroes, have been seen in 2 years

Venomous snakes mostly the ' fer de-lance, are common, yet only 2 cases of snake-bite—neither of them fatal —occurred during the year

A A

CLARK (H C) **Laboratory Report of Tela Hospital.**—*Fourteenth Ann Rep Med Dept United Fruit Company, Boston, Mass* 1925. pp 266–278

The following items from the Tela (Honduras) Hospital Report are of general interest

The chief cause of morbidity during the year was malaria, nearly one-third of the total number of discharges from Tela hospital during the year being recorded under malarial fevers Next came respiratory diseases (influenza colds, bronchitis, pneumonia), slightly more than one-eighth of the total number of discharges coming under this heading

The principal cause of mortality was lobar pneumonia, 34 deaths—29 per cent of the total number of deaths for the year—being due to that disease

The only epidemic serious enough to attract attention was measles, during June

160 carriers of *E histolytica* were detected, of whom only 92 showed any symptoms of dysentery

Of typhoid fever, 20 cases occurred during the year, 3 in foreign whites, 6 in negroes, and 11 in natives

During the year, each person admitted to hospital for a time long enough to obtain films was examined for malaria by both thin and thick film methods, of 3,566 persons examined 1,424 were positive, and the types of parasites observed were ' aestivo-autumnal, 1,026, tertian, 292, quartan 26, mixed aestivo-autumnal and tertian 80 "

A. A

TRANSACTIONS OF THE ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE. 1925. Mar. 19 & May 21. Vol. 19. Nos. 1 & 2. pp. 1–10.—**Laboratory Meeting.**

Among the numerous interesting exhibits and demonstrations provided at this meeting, attention may be drawn to the practical applications of the following.

(1). Pseudospirochaetes, having a misleading resemblance to spirochaetes, found constantly in the cerebrospinal fluid of monkeys and rabbits by Drs. ADAMS, BLACKLOCK & McCLUSKIE.

(2). A species of Leptospira, closely resembling *Spirochaeta icterohaemorrhagiae,* found in London tapwater, by Dr. E. HINDLE. The leptospirae are rarely to be seen in water taken straight from the tap, but occur in great numbers in tapwater which after the addition of a small quantity of human or animal faeces has been incubated for about 10 days at 25° C. They are excellent material for demonstration purposes.

(3). An ingenious method of getting ticks to feed in the laboratory at the experimenter's will, demonstrated by Drs. HINDLE & J. T. DUNCAN. HINDLE and MERRIMAN had shown that what may be inferred to be the olfactory sense of the tick has its local habitation in an organ (Haller's organ) embedded in the tarsi of the front pair of legs, since, when these parts are removed, the tick feeds without its customary discrimination.

A piece of animal membrane is closely tied across the mouth of a short tube completely filled with the liquid which the tick is required to imbibe. No bubbles must be left between the liquid and the membrane. If now the whole apparatus be stood in a water-bath maintained at a temperature of about 47° C., so as to keep the contents of the tube constantly at about 40° C., ticks deprived of the tarsi of the first pair of legs when placed upon the exposed surface of the animal membrane will attach themselves to it and take their fill as they would on a living animal.

A. A.

TRANSACTIONS OF THE ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE. 1925. Nov. 19 & Dec. 17. Vol. 19. Nos 5 & 6. pp. 271–281. With 4 figs on 1 plate. [3 refs.].—**Laboratory Meeting.**

Among the numerous exhibits the following are of particular interest. Sections of tissues sent by Mr. E. N. COWDRY, showing masses of his *Rickettsia ruminantium* regarded by him as the cause of heart-water in domestic ruminants in S. Africa. Specimens illustrating the life-history of Gongylonema shown by Dr. H. A. BAYLIS. Preparations of margosic acid used in treatment of syphilis and other infective granulomata and malignant growths, by Major K. K. CHATTERJI, I.M.S. Demonstrations of method for differentiation of various bacteria of the Salmonella group, by Dr. J. T. DUNCAN. Sections of intestine of kitten presumably infected by rectal injection of cysts alone of *Entamoeba histolytica,* by Mr. C. A. HOARE. Sporozoites in the salivary gland of an *Anopheles maculipennis* that was one of a batch that had proved to be infective 95 days before, that had had opportunities of injecting sporozoites on 24 occasions, and that during the 95 days had been kept in a cold chamber, except when warmed up from time to time to hasten their digestion of blood; also sporozoites and "zygotes" from another Anopheles of the same batch, which had lived 88 days under the same conditions; both these were shown by Colonel S. P. James, I.M.S. Cultures of spirillum of rat-bite fever, by Dr. Th. Joekes; the culture medium composed of inspissated horse-serum covered with Vervoort's medium, and the preferable conditions of culture being aerobic at 37° C. *Cyclops leuckarti* with a procercus of *Dibothriocephalus mansoni*, an experimental infection with oncospheres from eggs passed by a dog fed with sparganum from a Chinese snake; also a cockroach (*Periplaneta americana*) naturally infected with Gongylonema larvae; both shown by Professor Leiper. Sections of cutaneous nodules in *Xeroderma pigmentosum* exhibiting definite development of basal cell carcinoma (rodent ulcer) by Colonel Marrian Perry; the condition originated while the patient was abroad and exposed to intense sunlight, and has been steadily progressive since his return to England two years ago. *Onchocerca volvulus* embryos in skin and blood, by Dr. Dyce Sharp. Sections of abomasum of sheep containing *Globidium gilruthi* in various stages of development, by Miss M. Triffitt. *Endotrypanum schaudinni* within red blood corpuscle of two-toed sloth, by Drs. C. M. Wenyon & H. H. Scott. Spleen smears of horse from Uganda showing a possible Leishmania, with a striking resemblance to spleen smears from kala azar patients, by Dr. C. M. Wenyon.

A. A.

TRANSACTIONS OF THE ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE. 1926. Mar. 18 & May 20. Vol. 20. Nos. 1 & 2. pp. 1–8. With 4 figs. on 1 plate & 2 text figs.—**Laboratory Meeting.**

Dr. P. A. Buxton showed photographs of yaws from the S. Pacific and a new instrument for measuring and integrating solar radiations.

Lieut.-Col. Clayton Lane exhibited diagrams illustrating efficiency of his apparatus for recovering hookworm ova, and explained his methods for collection and management of hookworm larvae: his "compact apparatus" for collection of larvae from soil by soakage through fine material supported on wire gauze in a small petri-dish, and incubation at 27° C. For checking migration of larvae he uses a nest of three petri-dishes of increasing size, the inner one contains the mixed earth and faeces and the middle and outer contain water, the whole being kept centred by portions of thick, submerged, copper-wire; larvae reach the outer dish with extreme rarity.

Lieut.-Col. W. P MacArthur demonstrated the differential characters of the W. African species of Xenopsylla, including Synosternus

Dr H. J. Smyly showed photographs of hamsters from N. China, and smears showing *Leishmania donovani* in those animals.

Dr. A. C. Stevenson displayed sections of liver from cases of West African yellow fever. Except for the apparent absence of leptospira the histological evidence suggests that there is no difference between yellow fever in West Africa and in America.

Drs. J. G. Thomson and A. Robertson demonstrated the Coccidia of Fish—*Eimeria sardinae* from the testes and *E. clupearum* from the liver, of herrings—which they have shown may pass through the human intestine almost unchanged (*ante*, pp. 703, 704).

Dr. H. M. Woodcock demonstrated *Encephalitozoon cuniculi* from the rabbit. He has found these bodies not only in the brain of a rabbit five months previously inoculated with a strain of Kling's encephalitic virus, but also (very scantily) in the brain of an apparently healthy stock rabbit. The former animal showed no symptoms up to the time when it was killed; but, post-mortem, considerable perivascular infiltration and many definite focal lesions were found in the brain. As Encephalitozoon has been regarded as a Microsporidian in proximity to *Glugea lophii* of the Angler-fish; specimens of the Glugea were shown for comparison. Sections of the hypertrophied proximal regions of cranial and spinal nerves of the infected fish showed the enormous increase in size that takes place in the infected ganglion cells; 3 or 4 parasitic cysts may develop in one nerve-cell.

Prof WARRINGTON YORKE showed for Prof. B. BLACKLOCK, slides illustrating the development of *Onchocerca volvulus* in *Simulium damnosum*

Drs. WENYON and H H SCOTT exhibited blood-films showing stages in the development of *Lankesterella minima* of the Indian bull-frog and a hitherto unrecorded Babesia in the North American racoon (*Procyon lotor*)

Prof. J. L. KIRBY-SMITH, of Jacksonville, Florida, gave a lantern demonstration of Creeping Eruption as a helminthic manifestation. "Creeping disease" has been supposed to be—and in some cases, perhaps, may be—due to a fly maggot of some kind, but in the southern and eastern States of America it seems to be caused by a microscopic nematode larva, akin to Gnathostoma, which has been named *Agamonematodum migrans*, prevalent in sandy and coast regions from spring to autumn. Nothing certain is known of the host of the adult nematode.

A. A.

SLEEPING SICKNESS

DYE (William H) **The Serum-Formalin Reaction in** ***Trypanosoma rhodesiense*** **Infection.**—*Trans Roy Soc Trop Med & Hyg.* 1926 Mar 18 & May 20 Vol 20 Nos. 1 & 2 pp 74–92. With 3 text figs [1 ref]

A valuable paper from an author who thinks for himself, unfortunately without figures of the results of lumbar puncture Since leishmaniasis is absent, Dr Dye writes, from the greater part of Tropical Africa where sleeping sickness is found, it appeared important to give the serum-formalin reaction a thorough trial in the hope that it might prove of diagnostic importance and throw light on immunity and natural recovery He had cases in all stages of the disease in a hospital camp in the south-eastern portion of Tanganyika Territory, and therefore opportunity for study of the test, before, during and after treatment The diagnosis of *T rhodesiense* was based on the finding of posterior nuclear forms in inoculated rats and on the local species of tsetse being *G morsitans*

After some account of the features of the country, he states that in March 1925 it was reported that the people in a certain village were dying in excessive numbers, in 3½ months 42 out of a population of 115 Investigation revealed 24 cases of trypanosomiasis and probably most of the 42 deaths were from that disease Segregation and treatment were started and the figures for this and 11 other villages are given for the next 5 months As a result of this study the author writes —

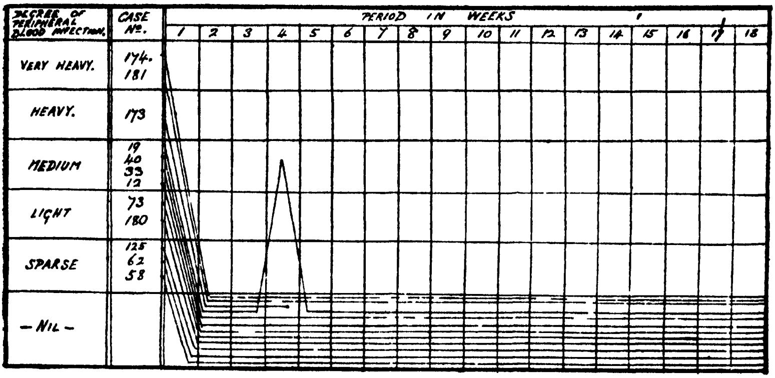
> ‘ Clearly the disease spreads slowly and it tends to rapid disappearance. I do not think that segregation had any appreciable effect in limiting the outbreak for few cases were detected or reported themselves until actually ill The sick retired to the interior of their smoky huts, there to remain, even for sanitary purposes, until recovery or death overtook them They are not, therefore, very dangerous to their neighbours Spread of infection undoubtedly takes place in the earlier stages when, as is well known, the peripheral blood may swarm with parasites, while clinical symptoms are slight or even absent A few cases in this stage were detected in the villages by routine blood examinations But after May, when segregation and treatment had started few early cases were discovered and the disease would, I feel sure, have petered out in any case in much the same way as it has since done

According to the natives such outbreaks have occurred frequently, the usual remedy being to remove the village It is considered that the disease is endemic, and its spread appears to suggest " a man-to-man infection of comparatively feeble virulence "

Treatment—Both " Bayer 205 " (germanin) and tryparsamide were available Of germanin was given 1 gm on the 1st, 3rd, and 5th days, and then at intervals of 5 to 7 days, till 6 or 7 gm had been reached, usually intravenously Slight albuminuria occurred but never such as to stop treatment The dose of tryparsamide was 3 gm dissolved in 5 cc of water, cold or at blood heat, 10 doses at intervals of 5 to 7 days, to 30 gm , usually intravenously intramuscular injection caused temporary thickening and tenderness Twelve cases were treated by each drug and the figures give a clear idea of the effects

Whereas germanin cleared out the trypanosomes in 24 hours, not to reappear over a period of 2–6 months (one death and one relapse excepted), tryparsamide, as the notes show, was a failure Three of the tryparsamide cases had marked changes in the cerebrospinal fluid, but all died with no improvement in the cell-count; on the other hand, one similar germanin case did very well, with a normal count 2 months later. As the author remarks, these results differ much from those obtained in *T. gambiense* infection. One tryparsamide patient became completely blind after 30 gm.: [no details of the

Action of "Bayer 205" on the Peripheral Blood Parasites (*T. rhodesiense*).

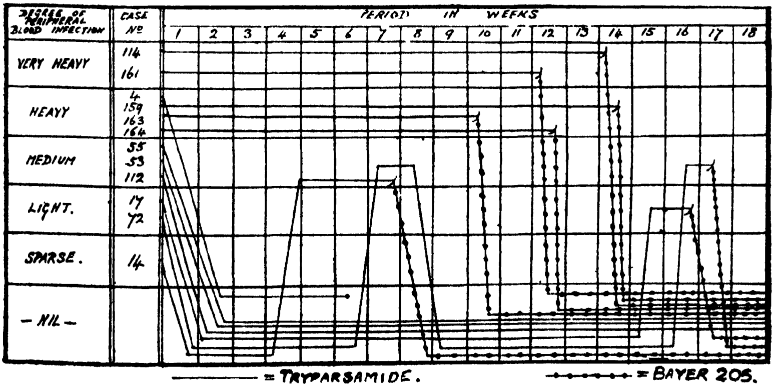


Case 173 died after 5 injections of "Bayer 205."

Case 19 relapsed once after the 5th injection of "Bayer 205," a medium infection of trypanosomes appearing in the blood for a short period.

The remainder have remained free from parasites for periods varying from 2 6 months

Action of Tryparsamide on the Peripheral Blood Parasites (*T rhodesiense*)



Cases Nos. 161, 4, 163 and 164 died.

Cases Nos. 114, 161, 159, 163 and 164, only lost the parasites from the peripheral blood when "Bayer 205" was substituted.

Cases Nos. 17, 72 and 14 relapsed, and parasites only disappeared from the blood when "Bayer 205" was substituted.

[Reproduced from the *Transactions of the Royal Society of Tropical Medicine and Hygiene.*]

state of the C S F] Another series of cases began with germanin and finished with 5 weekly 3 gm doses of tryparsamide : the results were " so spectacular " that the author now uses this method as a routine. When, however, germanin follows tryparsamide, even though the parasites disappear, the patients do not react clinically but eventually die.

The Serum-Formalin (S/F) Reaction.—

" A quantity of blood, sufficient to yield 1 cc of serum, was drawn off by inserting a needle into a suitable vein, and running the blood into a small glass entomological specimen tube Natural clotting was allowed, and the serum drawn off after 24 hours One minim of liq. formaldehyde was added to 1 cc of serum, and the specimen examined at the end of 30 minutes, 1 hour, 5 hours, and 24 hours For convenience, the results were arbitrarily classified as follows —

Fluid at the end of 24 hours .	Negative
One-quarter solid at the end of 24 hours...	P 1
One-half solid at the end of 24 hours ...	P 2
One-half solid at the end of 5 hours ...	P 3
Three-quarters solid at the end of 5 hours	P 4
Completely solid at the end of 5 hours ..	P 5
Completely solid at the end of 1 hour or less	P 6

Details are given of the test in tryparsamide and germanin cases and the following conclusions are reached —

" (1) Untreated cases usually showed a P 5 reaction, but ranged from P 3 to P 6, the latter being uncommon with this species of trypanosome The intensity of the reaction was very little, if at all, dependent on the heaviness or otherwise of the peripheral blood infection

" (2) Cases treated with a full course of 30 grammes of tryparsamide, but failing to improve with treatment, showed little if any alteration in their blood reactions, either during or after treatment

" (3) Those cases, if afterwards treated with " Bayer 205," often showed great improvement When this was so the reaction dropped to negative or at least to P 1

" (4) Cases treated with tryparsamide and reacting clinically and microscopically to this drug, did not show a corresponding improvement in their blood reactions

" (5) Cases treated originally with " Bayer 205 " showed a rapid, and apparently permanent, disappearance of this reaction

" (6) The disappearance of this reaction does not eliminate the possibility of a relapse It is not a definite criterion of cure It is, however, a strong indication that treatment is satisfactory, for only one case that reached a negative reaction relapsed Although " Bayer 205 " has a much more potent action on *I rhodesiense* in the blood stream than has tryparsamide, yet the presence of the reaction in the blood of these cases seems to depend on factors other than the mere presence of peripheral blood parasites "

In four instances young, apparently healthy, people were found during routine examinations of villages to harbour trypanosomes, and one of these cases is described He had no symptom but cervical gland enlargement, had a sparse blood infection and a P.2 reaction. He received 5 injections of tryparsamide , parasites went and reaction became negative , he relapsed and reaction went to P 4 ; he received 4 half gramme germanin injections with fall first to P.1 and then to negative and disappearance of trypanosomes The author thinks that more of these cases could be found if frequent routine search was made and notes that their S/F reaction is extremely mobile

Results obtained in other infections and in undiagnosed cases :—

No solidification of serum was obtained in subtertian malaria, filariasis (*perstans* and *bancrofti*) or amoebiasis. In yaws tertiary cases were negative, but a few in the secondary stage, chiefly children, gave a P.2 or P.3 reaction: all these came from fly areas, patients from fly free areas being negative. Treatment with bismuth did not remove the reaction but one injection of germanin removed it or reduced it in 14 days. Several patients in a leper settlement in a fly free area were tested; all types gave " a heavy and almost immediate P.6 reaction "—solidification of the serum in 30 minutes, a very rare occurrence in trypanosomiasis. [The effect of germanin on the reaction was not tested in lepers.] Leprosy and yaws therefore appear to be the only diseases likely to confuse the issue.

And now follows the most interesting part of Dr. Dye's paper. In examining villagers in and close to the infected area it was noticed that a very high percentage of apparently healthy children had marked enlargement of the glands in the posterior triangles of the neck, and the glands were generally of the type associated with trypanosome infection. Figures are given from 12 villages of the total trypanosome infections found and the percentage of such children in them, and it is stated that the percentage is in close relation with the amount of infection [the reviewer cannot follow the author here; perhaps the figures have gone wrong]. These children appeared healthy, and parasites were found in only 4. One village was selected for S/F test, and 70 per cent. of these children gave a reaction of P.2 to P.4 while it is stated that children living outside the fly area showed neither the high percentage of gland enlargement nor the S/F reaction. Six children with glands received 1 gm. of germanin each; the reaction disappeared in 4 within 14 days and in the others to nil and P.1 after a month. " Seeing that 4 harboured parasites in the blood it would appear probable that the blood reaction given in the other children points definitely to an infection with trypanosomes at one time or another." He goes on to speculate whether they have recovered or still harbour trypanosomes. In any event these results suggest to him endemicity and man-to-man infection with much natural resistance. If the virulence of a strain tends to lessen with man-to-man infection, as he says has been pointed out, this might well explain the healthy carrier. He considers that natural recovery may occur with considerable frequency. Finally he expresses the opinion that in solving the problem of sleeping sickness control greater hope is to be entertained from treatment than from the " hopeless task " of fly elimination.

Results obtained from the local fauna.—Of 6 waterbuck shot, 5 were positive (P.4) and in one of these trypanosomes were found; of 5 duiker 3 (P.3) (P.4) (P.5); of 2 warthog both (P.2 and 3); of 8 wildebeest 1. Of elephant, sable, hartebeest, 3, 4 and 3 were negative.

Under the heading " Conclusions " there is discussion of these results. It was noted that the S/F reaction was influenced by germanin, i.e., if 0·25 grain was left in contact with the serum for one hour before the formalin was added the reaction was retarded at least 48 hours; this did not apply to cases of leprosy. Tryparsamide in the same conditions had no effect. The C.S.F. did not give the reaction. " Although the reaction is in some degree disappointing, a negative finding in an untreated case is of undoubted value " and if in a suspected case the injection of germanin alters the intensity of the reaction it is a valuable aid to diagnosis.

The author suggests that it would be of interest to know the results of the S/F reaction in persons infected with *T. gambiense.*

A. G. B.

OLIVIER (J.). Service médical du Ruanda-Urundi. (Territoires à mandat). Rapport annuel pour 1924. **[Medical Report on Ruanda-Urundi for 1924.]**—*Ann. Soc. Belge de Méd. Trop.* 1926. July. Vol. 6. No. 2. pp. 115–144.

Eight pages of this report concern sleeping sickness on the north-east shore of Lake Tanganyika. Here is a plain, backed by hills, varying in width between 2 and 20 kilos, and cut by nullahs which become marshy as they enter the lake. This is good land for cultivation of bananas and *G. palpalis* abounds in the rushes on the shore and along the banks of the nullahs. In the Usumbura section 26,478 persons were examined, in 1,617 the glands were punctured, and 91 cases of infection detected; the percentage is calculated to be about 0·5. In the Rumonge section to the south 5,849 persons were examined and 487 infections revealed by gland puncture, i.e., 8·7 per cent. Measures of prevention are detailed

A. G. B.

BLANCHARD & LAIGRET. Modifications survenues depuis 1908 dans la distribution de la maladie du sommeil en Afrique équatoriale française, et situation actuelle. **[Changes since 1908 in the Distribution of Sleeping Sickness in French Equatorial Africa and the Situation To-day.]**—*Ann. Méd. et Pharm. Colon.* 1926. Jan.–Feb.–Mar. Vol. 24. No. 1. pp. 67–76.

This paper consists of the conclusions of a longer one and without a map it cannot be followed. For the details the original must be consulted.

In Gabon, apart from the Upper Ogowe, the disease has not made notable progress in 15 years, and is not an important factor of morbidity and mortality. Upper Ogowe is an epidemic focus which has extended considerably and is still increasing. The proportion of infected is given as 30 per cent

For Middle Congo the conclusion is that the disease has considerably augmented in 15 years.

In Oubangui-Shari the most notable feature is the progressive spread towards the north.

In the Chad Colony a few imported cases were noted in 1905. From 1907–8 European occupation increased both the traffic and importation of the disease. In 1914 it had reached the tenth degree of north latitude, but since then it has extended to the basins of the Lower Shari and Lower Logone and now rages to the very edge of the Lake.

The areas which are badly infested and free respectively are given in tabular form for 1908 and 1924. Taking the population of the whole area at one and a half million, the authors put the average percentage of infection at 7 and believe that the total number of infected exceeds 100,000, and assuming that all cases die in an average period of 4 years, 25,000 are lost yearly. This and concomitant effects would by itself account for the depopulation of the country.

The authors state that prophylaxis has been hitherto ineffective because of the scarcity of medical personnel and the consequent employment of incomplete atoxylization, and because of the neglect of the regulations concerning the movements of infected natives. They make suggestions to remedy these defects.

A. G. B.

BARRETS (J. Sant'ana). La maladie du sommeil dans la Guinée Portugaise. [**Sleeping Sickness in Portuguese Guinea.**]—*Bull. Soc. Path. Exot.* 1926. Apr. 14. Vol. 19. No. 4. pp. 315–317.

Though *Glossina palpalis* is prevalent in Portuguese Guinea no case of human trypanosomiasis has hitherto come to light. A European official of 40 reached Portuguese Guinea in 1912, and, with three intervals of leave in Portugal, has remained there since. He fell ill in November 1925 with fever and erythema, and trypanosomes, presumed to be *T. gambiense*, were found in his blood. The author suggests that the disease was introduced by an infected person from Angola, with which there is monthly steamboat communication. [It seems improbable that Portuguese Guinea, with sleeping sickness on each side of it, is really free from that disease.]

A. G. B.

ARCHIBALD (R. G.) & RIDING (Douglas). **A Second Case of Sleeping Sickness in the Sudan caused by** *Trypanosoma rhodesiense.*—*Ann. Trop. Med. & Parasit.* 1926. June 24. Vol. 20. No. 2. pp. 161–166. With 1 text fig. [1 ref.]

The first case of *T. rhodesiense* infection from the Sudan was recorded in 1922 (this *Bulletin*, Vol. 19, p. 876). The present case, that of a boy of 15, was seen also in the Tembura district. Trypanosomes were found by gland puncture, and 0·5 gm. of atoxyl given, followed by a dose of 1·0 gm. a week later. Ten days later, examination of the gland juice showed large numbers of trypanosomes, and, as this was unusual, smears were made by Captain MAURICE and a rat was inoculated. Later two inoculated rats were sent to Khartoum. Their peripheral blood showed an intense infection and about 20 per cent. of the short forms of the trypanosomes showed various stages of displacement of the nucleus The patient died in spite of treatment 6 months after the diagnosis was made. A table is given of subinoculations in white rat, gerbil, rabbit, monkey and guineapig. In subinoculated white rats and gerbils posterior nucleated forms were seen. The clinical history of the case and the morphological characters of the trypanosome support the diagnosis of *T. rhodesiense*, which was confirmed by Dr. WENYON after examination of the smears.

A table of pathogenicity of trypanosomes from the 1922 case, also from Tembura, which is given, is similar to the one just mentioned. No animal survived more than 34 days. The area is one in which *T. gambiense* is endemic and "*G. fuscipes*" and *G. morsitans* abound. These two cases indicate that *T. rhodesiense* infection exists in the Bahr-el-Ghazal.

A. G. B.

BULLETIN DE LA SOCIÉTÉ DE PATHOLOGIE EXOTIQUE. 1926. Jan. 13. Vol. 19. No. 1. p. 4.—Voeux (Tryparsamide ; prophylaxie de la maladie du sommeil). [**Resolutions on Tryparsamide and Sleeping Sickness Prophylaxis.**]

The Society expressed the following views :—

1. Considering that investigations with tryparsamide have established the superiority of this drug in advanced stages of sleeping sickness, further work should be done with the p-aminoglycinephenylarsenic acids and their derivatives in order to be able to decide which

is the most economic and best as a substitute for atoxyl in prophylaxis and treatment of human trypanosomiasis.

2. The Society is much impressed with the considerable morbidity and mortality of sleeping sickness in Equatorial Africa, particularly in the Cameroons, and considers that there is no more urgent problem in these countries than the combat of this disease; it considers that technicians directly appointed by the Minister for the Colonies and furnished with administrative powers and sufficient finances should be charged with the object of combating the disease, in collaboration with the high administrative authorities and with the directors of sanitary service.

W. Yorke.

VAN DEN BRANDEN (F.). L'action du tryparsamide chez les trypanosés chroniques. Deuxième note préliminaire. [**The Action of Tryparsamide in Chronic Trypanosomiasis.**]—*Bull. Soc. Path. Exot.* 1926. Jan. 13. Vol. 19. No. 1. pp. 8–11. [1 ref.]

From the treatment of 126 cases of chronic sleeping sickness with tryparsamide (this *Bulletin, ante*, p. 424), the author reached the conclusion that failures, when they occurred, were due to either the co-existence of nervous syphilis or to a previous course of arsenical treatment which had rendered the trypanosomes arsenic-resistant. Details are given of a series of eight cases which support this hypothesis. Accordingly, it is proposed to replace atoxyl and soamin by tryparsamide or the similar product of Belgian manufacture—Tryponarsil; by this means it is hoped to avoid the production of arsenic-fast strains. On the other hand, in cases exhibiting marked lymphocytosis in the spinal fluid, without trypanosomes, it is necessary to eliminate the possibility of nervous syphilis, and the presence of this condition explains, in certain cases, the failure of tryparsamide. The frequent absence of parasites from the blood and glands in cases of chronic trypanosomiasis makes the diagnosis very difficult; diagnosis must, therefore, be based on the discovery of trypanosomes in the spinal fluid, and when these are absent syphilis must be excluded by performing a Wassermann test on the spinal fluid.

W. Y.

i. LAIGRET (J.). Traitement de la trypanosomiase humaine par la tryparsamide. [**Treatment of Human Trypanosomiasis by Tryparsamide.**]—*Ann. Inst. Pasteur.* 1926. Mar. Vol. 40. No. 3. pp. 173–193. [11 refs.]

ii. ABBATUCCI (S.). A propos du traitement de la maladie du sommeil par la tryparsamide.—*Bull. Soc. Path. Exot.* **1926**. Apr. 14. Vol. 19. No. 4. pp. 271–275. [2 refs.] & *Ann. Méd. et Pharm. Colon.* 1926. Apr.–May–June. Vol. 24. No. 2. pp. 235–239. [1 ref.].

iii. JAMOT (E.). Au sujet du traitement prophylactique de la maladie du sommeil. [**On the Subject of the Prophylactic Treatment of Sleeping Sickness.**]—*Bull. Soc. Path. Exot.* **1926**. June 9. Vol. 19. No. 6. pp. 463–471. [4 refs.]

iv. ABBATUCCI. Une révolution thérapeutique dans le traitement de la maladie du sommeil. [**A Therapeutic Revolution in the Treatment of Sleeping Sickness.**]—*Ann. Méd. et Pharm. Colon.* 1926. Jan.–Feb.–Mar. Vol. 24. No. 1. pp. 83–87. [4 refs.]

i. This paper from the Pasteur Institute of Brazzaville is a reasoned statement in favour of tryparsamide, which the author thinks should supersede other remedies in French Congo. The Institute has been experimenting with the drug since 1924, at which date its value in the first stage of the disease had been fully established. They have therefore concentrated on patients at later stages, and have treated 95 natives, all with changes in the cerebrospinal fluid, most of whom have been under observation for eight months or more. Owing to the fact that insufficient supplies of the drug were available most received only a single course of 5 or 6 injections.

The cases treated are in four categories :—

1. At the beginning of the second stage—The invasion of the nervous centres is recent, and the changes in the C.S.F. slight, at most 70 lymphocytes per cmm and 0·50 gm. albumin per litre ; trypanosomes never present. In such cases, cure by atoxyl is no longer possible. Of the 10 patients treated, 7 could be kept under observation, and were examined a month later ; in 4, the C.S.F. was normal in all respects, in 2 it was changed for the better, and 1 was normal as regards the cells ; in those which could be examined 8 months later the improvement was maintained.

2. Second stage with apparent preservation of health.—In these, the C.S.F. is profoundly changed and trypanosomes are commonly found in it, but there is no clinical symptom of affection of the nervous system. The author says that the systematic practice of lumbar puncture shows that a high proportion of infected natives belongs to this category ; they are quite incurable by atoxyl and emetic. 36 were treated. In 29, followed for 8 months or more, in 9 instances the C.S.F. improved, and in 20 it became quite normal ; in 10 cases in which trypanosomes had been found they disappeared from the C.S.F. and were not found at later punctures. In one case there were transitory signs of optic neuritis. In another case, insufficiently treated, the parasites reappeared 4 months after cessation of treatment. A table shows the striking improvement in the C.S.F. in 6 instances in which the formula became normal. The significance of the disappearance of trypanosomes is stressed.

3. Advanced second period.—Here not only are there profound C.S.F. changes, but obvious changes in the clinical condition, and the improvement after tryparsamide is so striking that numbers of natives have come to request treatment just as they do for yaws. The author treated 20 cases, all with somnolence, inco-ordination of gait, facial tics, etc. There was one death and two cases of amaurosis which did not lead to loss of vision. Of the 17 remaining, one relapsed but in the rest there was a " veritable transformation " which is graphically described. In 4 instances the C.S.F. became normal ; in 10 others there was improvement in the fluid, and the author suggests that in some of such cases some of the increase in cells and albumin is permanent ; clinically they were cured. Details are given of 4 patients.

4. Terminal stage.—18 were treated, such patients as remain hidden in the villages or are brought by their friends when near death,

patients with incontinence and coma or convulsions. The four patients first treated died, 3 of them soon after the first injection. The author thinks that the more advanced the case, the smaller should be the dosage; and after this he used doses of at most 2 cgm. per kilo, repeated 2 or 3 times in the first ten days; when improvement has begun the doses may be increased. With this medication, 14 stood the drug and have survived, 7 were living 6 months later, 5 after 9 months, and one after more than a year. In 6 instances there were visual troubles which twice led to blindness. Seven cases are given in detail. A table shows the numbers treated at the lazaret and the deaths each month from May 1924 to May 1925.

Among 356 in which tryparsamide was not used there were 27 deaths.

Among 678 in which tryparsamide was generally used there were 12 deaths

Discussing the drawbacks of tryparsamide the author points out that apart from category 4 there was only one death in this series, so that there is little danger of a fatal result except in advanced cases, and this may be avoided by reduced doses. Amaurosis is as frequent as with atoxyl at the second stage, but it does not come on so suddenly and in most cases disappears when the treatment is interrupted, which is not the case with atoxyl. In one instance there was a nitritoid crisis. If given under the skin, the drug often causes suppuration; if a vein is not accessible, it should be injected in the muscles. It has the advantage of being effective also against yaws and syphilis, so wide spread in Tropical Africa.

Discussing the use of tryparsamide in drug prophylaxis, the author says that according to VAN DEN BRANDEN it is at the first stages superior to atoxyl, but experience shows that only a small proportion of infected natives are seen at this stage. The patients with changes in the C.S.F. numbered 57 per cent. in JAMOT's series in Cameroon, and at Brazzaville there were two at the second for every one at the first stage. But atoxyl though effective at the first stage is only temporarily so at the second; the parasites of the central nervous system reinvade the blood. If the 95 patients had been treated by atoxyl in the same conditions, the relapses would have reached 40 to 50 per cent. The inference is that tryparsamide should replace atoxyl for drug prophylaxis. To the objection that injections under the skin are not tolerated the author replies that the natives accept intravenous injections because they are painless, and the native infirmiers become very skilful in giving them. Another point—it is not safe to treat patients at the second period with atoxyl without lumbar puncture, but with tryparsamide this is unnecessary.

He recommends that the infected should be assembled by clinical examination in two groups. In the first are patients at the first stage, at the beginning of the second, and those of category 2. These can all stand full doses, which for an adult of 50 kilos should be 2 gm. in the first and the second week, 2·50 in the third and fourth, 3 in the fifth and sixth. The second group, the cases with evident nervous symptoms, will receive 6 weekly injections of 1 to 2 gm. at most.

ii. Abbatucci reported to the Society that Dr. BOYÉ, Medical Inspector, Director of the Health Service of French Equatorial Africa, had written to the Inspector-General of the Health Service at the French Colonial Office about LAIGRET's conclusions, which he considered premature and not applicable in current prophylactic practice. The dosage of tryparsamide was not yet fixed. The deaths attributable to the drug were 6·6 per cent., and loss of vision 10 per cent. The technique of administration was unsuited to native infirmiers.

The author read a note about the use of the drug which had been sent to the doctors concerned.

LAIGRET commenting on this communication said that these remarks concerned his cases; the mortality figures were correct, but all the deaths which had occurred were in very advanced cases treated at the outset. By reducing the dose he had avoided the repetition of such fatalities. The statistics of the effect on vision were inaccurate; the proportion should be 2 per cent., not 10 per cent.; he could only attribute the error to the inclusion of atoxyl-blinded cases which had remained in the lazaret; the affected patients were well advanced in the second stage. M. LEGER said that in tryparsamide treatment there were subjective signs of affection of vision which would enable one to stop treatment before irremediable damage was done—objects looked at appear to move, the patients see white balls coming towards them and falling to powder before reaching them, etc. MOTAIS remarked that even in natives it is possible to test the visual acuity, which should be done regularly.

iii. Jamot discusses this subject at length in a further paper, and notes that LAIGRET proposes to substitute tryparsamide for atoxyl. He observes that the intravenous route is not indispensable, for at Leopoldville the drug has been given both into the buttock muscles and under the skin in 10 per cent. solution without inconvenience. He gives an historical account of the drug treatment of human trypanosomiasis. For the last ten years more than 50,000 patients have been treated under his direction with large doses of atoxyl, repeated as often as was possible, at intervals of 10 or 15 days, or monthly or every second or third month. He cites districts in which this has had a striking effect and the disease has regressed; but it has not disappeared, even on the Oubangui after 7 or 8 years' energetic atoxylization. The fact is that patients at the second stage on whom atoxyl has only a temporary effect represent more than half the patients, and when to these are added those at the first stage who are refractory to atoxyl we have two-thirds of the cases on which atoxyl has no lasting effect. One must conclude that atoxyl by itself will not solve the problem of drug prophylaxis. Jamot gives an account of his own experience with tryparsamide. Out of 39 patients, mostly advanced, he has had 2 deaths, 6 failures, 2 cases of transitory amblyopia and 2 of persistent amaurosis, 21 ameliorations and 6 apparent cures, i.e. 70 per cent. of more or less favourable and sometimes astonishing results in patients in bad state and doomed without the drug to a speedy death. The improvements persisted a year and a half later. There is no doubt of the great efficacy of tryparsamide in advanced cases, in which other trypanocides are almost useless. He is, however, less certain about the early cases, and thinks that more data are desirable.

His conclusion is that it is not necessary to choose between atoxyl and tryparsamide, but that these and all other trypanocides should be employed where they are appropriate.

LAIGRET thought that the following conclusions would find general acceptance:—

In trypanosomiasis patients at the first stage (with integrity of the C.S.F. rigorously established by lumbar puncture), continue to use atoxyl which has proved itself and is obtained at a lower price than tryparsamide.

In patients at the second stage (in whom lumbar puncture demonstrates the presence of leucocytosis or albumin exceeding the normal) employ tryparsamide

Whenever there is doubt about the stage of the disease, whenever, for instance, lumbar puncture cannot be done, give tryparsamide, which is effective at both stages

iv Another tryparsamide article chiefly concerned with LAIGRET'S papers and conveying no fresh information

A G B

WALRAVENS (P) Tryparsamide et trypanosomiase Névrite optique [**Tryparsamide and Trypanosomiasis. Optic Neuritis.**]—*C R Soc Biol* 1926 June 25 Vol 95 No 22 pp 254–256

After an account of 3 cases, judged by their names to be natives of Tropical Africa the author writes to the following effect Among 18 patients with advanced trypanosomiasis treated we have had three serious cases of impairment of vision The first progressed to almost complete blindness In treatment of the others more prudence was shown The second case improved progressively and symptoms have almost disappeared The third in spite of suspension of treatment has improved only slightly Objectively there is no great difference between the lesions of atoxyl and those of tryparsamide but the latter seems less harmful, for with atoxyl there is almost always progressive atrophy going on to blindness In each the papilla becomes white, and there are signs of optic atrophy Central vision is much affected, the visual field is contracted peripheral vision is less concerned

The first patient received 57 gm in 16 weekly injections the second 60 5 gm, and 2 months later 20 gm in 8 injections the third 64 5 gm in 15 injections [These amounts seem large for patients at the advanced stages described]

A G B

SCHOFIELD (A T) LOUW (Graham) LUMSDEN (K) SOHI (Usho Ram) [**Reports on Treatment of Sleeping Sickness with Tryparsamide in the Uganda Protectorate, 1925.**]—Enclosures in Despatch No 262 from Governor of Uganda to Secretary of State dated 5th June, 1926 Received through Colonial Office, October 5th 1926 7 pp foolscap [Proof X5527 Med & San —7506]

Dr A T Schofield furnishes a report on 14 cases all of which appear to have been advanced The after-treatment observation period varied as a rule from 1–5 months in one instance it was 13 months Lumbar puncture was not done, it is noted several times as "refused" One death occurred soon after admission The author writes "The intravenous injections of tryparsamide have proved to be the most encouraging treatment ever used in Toro" He commences with 2 gm and follows with 4 or 5 weekly injections of 3 gm Three other reports on treatment by tryparsamide accompany Dr Schofield's—from Madi, Chua and Gulu respectively—but the data are so incomplete that no sound conclusions can be formed [It is unfortunate that in Uganda lumbar puncture dispels confidence, it seems to be successfully practised by mission doctors elsewhere in Tropical Africa, see KING, KEEVILL, KELLERSBERGER, below]

A G B

LEWIS (Kenneth M.). **Trypanosomiasis. Relative Frequency in the United States, Tryparsamide Therapy in Refractory Cases.**—*Boston Med & Surg Jl* 1926 July 22 Vol. 195 No. 4. pp 167–168

In the course of three years the author has seen seven cases of human trypanosomiasis in the United States, all contracted in Africa: he thinks there must be other, unrecognized, cases The last two were refractory to treatment, including tryparsamide Increased doses therefore up to 7 gm were tried with happy results

Case I, diagnosed July, 1925, in Loanda, a month after probable date of infection Blood showed *I gambiense*, spinal fluid negative Treatment by 2 and 3 gm doses of tryparsamide to a total of 21 gm, parasites still present at conclusion Patient seen in U S A in October, 1925, no symptoms but large numbers of trypanosomes in blood four 3-gm doses of tryparsamide had no effect, nor had four 1-gm doses of "Bayer" Patient then received a 5 gm injection of tryparsamide, 2 weeks later a 6-gm dose and two weeks later 7 gm thereafter 7 gm a fortnight, and in the alternate weeks tartar emetic injections (100 mgm doses) After the first 5 gm dose the blood became negative and has remained so In March, 1926 the patient's condition was excellent The other case also an early one was similar The big dose treatment of each patient is being continued up to a total of 5 or 6 months

Dr PEARCE suggests that "these patients were unable to metabolize properly the smaller dose so as to obtain a therapeutic trypanocidal action and hence required the larger dose to accomplish this effect"

A. G B

KING (Judson C) **The Treatment of African Sleeping Sickness with Tryparsamide administered Intramuscularly.**—*Amer Jl Med Sciences* 1926 July Vol 172 No 1 (No 652) pp 51–63 [10 refs]

A useful paper from a Mission Hospital, describing with parasitological and cytological detail the treatment of 24 cases at Banza Manteke, near Boma, Belgian Congo The following are the salient points In work done under conditions that require the aid of poorly trained natives intramuscular injection is more practicable than intravenous. Hitherto it has been tried chiefly in early cases Dr King has studied its effect in advanced cases He classifies them as (1) early stages with no previous treatment, (2) later stages with no previous treatment, and (3) later stages previously treated with antimony or atoxyl or both Most of the patients were unable to sit up and were somnolent after the first 2 or 3 injections they walked to and fro from their villages In each case trypanosomes were sought in the glands, centrifuged blood, and cerebrospinal fluid and the cell content of this was recorded. Solutions of tryparsamide of 20 and 30 per cent strength were employed, injected into the glutei One or two series were given, each of ten weekly doses of 3 gm for patients of 50–60 kilos Two tables give the essential details of the clinical and laboratory investigations, one of the fresh patients, the other of those previously treated It is seen that many lumbar punctures were done, in one case 7 after conclusion of treatment, the last at 49 weeks, and in many instances the fall in number of cells is remarkable The beneficial results are described as pronounced, but in some previously treated patients the reduction of the cell content of the C S F was slow, and in one instance there was none

Two patients, one previously treated, complained of dimness of vision after the 2nd and 3rd dose; both were clinically well advanced. No interruption was made in the treatment and the symptoms "gradually ameliorated with a return to what appeared to be normal vision." The author has had other similar experiences. Induration of the injected area was frequent and abscesses occurred but not with the 20 per cent. solution. There was one death and one relapse. Attention is directed to the unusually low cell content of the C.S.F. in several patients, though there were symptoms of involvement of the central nervous system. Dr. King has followed 11 patients for one year, 3 for 9 months, 2 for 6 and 7, and 5 for 4 months, and no relapse has occurred.

A summary is given of the case history of each patient and the following conclusions:—

"1. Tryparsamide is well tolerated in 20 per cent. solution given intramuscularly, but in 30 per cent. solution causes more discomfort and leads sometimes to abscess formation.

"2. It has a definite trypanocidal action in the blood, the lymph and cerebrospinal fluid.

"3. With the exception of a certain type of previously treated chronic case, tryparsamide, given by the intramuscular route, is a specific in African sleeping sickness incited by *Trypanosoma gambiense.*

"4. Tryparsamide is equally efficacious in all stages of the disease, except in certain cases previously treated with arsenical and antimony preparations in which its efficiency is limited.

"There is a definite correlation between clinical symptoms, number of cells in cerebrospinal fluid and weekly treatments of tryparsamide, which may be expressed as follows: The number of cells in the cerebrospinal fluid varies inversely and the clinical symptoms improve directly with the number of weekly injections"

A. G. B.

KELLERSBERGER (E. R.). **"Bayer 205" (Germanin) in Sleeping Sickness—Report on 150 Cases Treated.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. June 17. Vol. 20. No. 3. pp. 185–194. [11 refs.] A French version in *Bull. Méd. du Katanga.* 1926. Feb. Vol. 3. No. 1. pp. 3–16.

A useful paper, confirmatory of previous work. In 2 years there were admitted to the hospital of the American Presbyterian Mission in the Lomani District, Katanga, Belgian Congo, a *palpalis* area, some 400 cases of sleeping sickness. The 150 cases here under review were classified under 3 heads; (1) disease in acute stage, C.S.F. normal; (2) pathological change in C.S.F. and sometimes trypanosomes, together with clinical changes; (3) gross changes in C.S.F. and marked clinical signs. Trypanosomes were found in all but 4 cases, which were advanced, most frequently in the glands; for the blood thick films were used. In most cases lumbar puncture was done before treatment, after treatment, and 3 and 9 months later.

Of 89 treated at the early stage 30 have remained well over one year, 20 over 9 months, and 35 for shorter periods. Of the 46 in category (2), 40 relapsed after 2–6 months, 4 have died, and none can be considered cured. Of the 15 in category (3), 6 have died and the rest have relapsed. The average treatment was 8–10 1 gm. doses in 8 or 9 weeks. "When concurrent infections were present (malaria, ankylostomiasis) the drug was poorly tolerated." In 80 per cent. of cases albumin appeared in the urine after 7–10 days; in most cases the treatment was continued and the albuminuria disappeared; the author notes that several female patients have since gone through a normal pregnancy.

An analysis of the cases which follows shows that about 100 per cent of the early cases are cured and that very small doses may be sufficient Three cases were quite well 2½ years after doses of 4 gm, 2 gm. and 1 gm. The author suggests that the continued activity of the drug in the body in association with proteins may explain such cures [It is worth noting that two of the first recognized cases from the Congo, Mrs. M. and Mrs G, infected in 1900 and 1901, though treated only with Fowler's solution, were well in 1912 and 1915 (*Sleeping Sickness Bulletin*, Vol 2, pp 282 and 286)]

In no case was it established that the drug reduced to any extent the cell-count in the C S F, though there might be a temporary improvement

Fourteen cases in the early stage are analysed and details given in an informative table, similarly 12 cases are analysed in category (2), and 9 in category (3), all of which received full treatment with slight, if any, benefit The final conclusion is that the usefulness of "Bayer 205" is limited to the early cases of trypanosomiasis, though it may serve as a prophylactic and protective agent.

A G B

KEEVILL (Arthur) **The Treatment of Sleeping Sickness** (*Trypanosoma rhodesiense*)—**a Study of Fifty Cases.**—*Trans Roy Soc. Trop Med & Hyg* 1926 Mar 18 & May 20 Vol 20 Nos 1 & 2. pp 111–118 [4 refs]

These observations were made at the Moravian Mission Hospital, Sikonge, south of Tabora, Tanganyika Territory, and are, as the author says, incomplete In all cases but one trypanosomes were found in the blood, and so easily that gland puncture was abandoned. The infective agent is believed to be *T. rhodesiense*

"The commonest symptoms are headache and pain in the legs and arms, usually associated with rapid wasting . One case sought treatment for anaesthesia corresponding to the distribution of the left ulnar nerve, one for a large painful swelling about the left elbow-joint, and one for irido-cyclitis with hypopyon All of these conditions cleared up rapidly with no treatment other than that for sleeping sickness The commonest sign was some enlargement of the axillary glands Swelling of the feet and legs occurred in 50, and enlargement of the spleen in 20 per cent of the cases Marked lethargy of long duration is rare in untreated cases" [The ease with which trypanosomes were found in the blood and the character of the symptoms are confirmatory of *T rhodesiense* infection]

Of a series of 53 cases in which lumbar puncture was done before treatment only 2 had a normal C.S F and both of these were seen within a week of the onset of symptoms, 37 of the 53 had trypanosomes in the C S.F, with in some instances a cell count as low as 4 or 10 cells per cmm

Eight cases were treated with tryparsamide, 8 or fewer weekly injections of 3 gm, with very unfavourable results In 3 instances trypanosomes reappeared, in 3 the condition changed for the worse, one patient improved but complained of constant headache One man received 35 gm in 14 days and died a week later.

Seven cases were treated by "Bayer" followed by tryparsamide. The table shows much better results—4 patients were very fit after

6 or more months—but 2 others were totally and one nearly blind, after totals of 24 and 21 5 gm tryparsamide

Nine cases were treated with " Fourneau 309," believed to be identical with " Bayer 205 , ' albuminuria appeared in each case, but cleared up later The results were good after 3 to 6 months

Twenty-six cases were treated with " Bayer 205 " Four died of the disease and one relapsed Otherwise the results appear good (the period of observation is in most 3–4 months) 5 gm was the maximum amount given The author expects a large percentage to relapse

Conclusions —

" 1 In *Trypanosoma rhodesiense* infections tryparsamide fails to sterilize either the peripheral blood or the spinal fluid, and produces very little immediate physical improvement

" 2 Immediate physical improvement usually follows treatment with ' Bayer 205,' with sterilization of the peripheral blood and disappearance of trypanosomes from the spinal fluid

" 3 The place of tryparsamide is in the treatment of those cases which have relapsed after treatment with ' Bayer 205 or ideally, in the subsequent treatment of all cases in which the spinal fluids fail to return to normal

' 4 Previous treatment with ' Bayer 205 greatly increases the risk of visual disturbance and blindness and subsequent treatment with tryparsamide should be postponed for at least ten weeks even if the urine gives no indication of renal changes being still present

" 5 The immediate results obtained with the drug which FOURNEAU, TRÉFOUEL and VALLÉE have designated ' 309 ' are at least as good as those obtained with ' Bayer 205 '

[See also DYE, p. 894]

A G B

MARSHALL (C H) & VASSALLO (S M) **A Final Report on the Treatment of Trypanosomiasis in Uganda.**—*Jl Trop Med & Hyg* 1926 Mar 15 Vol. 29 No 6 pp 85–89

The last report of these authors was fully noticed in this *Bulletin*, Vol 20, pp 331–5 They have since announced that their method of treatment in another area, the Nile district, in April and May, 1922, was far less successful. They realize the importance of classing their cases and suggest a classification which is, briefly, as follows A, The onset , blood infection , B1, gland enlargement , B2, onset of nervous symptoms ; B3, nervous symptoms more advanced , somnolence , C, " true sleeping sickness " " Classification must be based upon the clinical picture as a whole ' [In the present state of knowledge no classification which ignores the condition of the cerebrospinal fluid can be satisfactory] They believe that except in the " A " class trypanosomes are rare in the peripheral blood stream, give some figures in support and say " if trypanosomes are only found in the blood of early cases it may be presumed that this is the class of patient mainly responsible for infecting the fly "

[It is singular that so little experimental work has been published on this subject We know that human patients are not infective to fly unless the short forms of the trypanosome are present in the blood, and it has recently been stated (REICHENOW, this *Bulletin*, Vol 21, p. 54) that tsetse can rarely be infected from patients at an advanced stage of sleeping sickness A careful series of experiments is needed, for knowledge thus obtained would have much practical importance.]

A table is given of 214 cases treated by 17 methods, in ten of which the number of cases varies between one and seven, the patients being classified under B1, B2, and B3. Excepting one form of treatment (intravenous arsenic) " all cases showed 100 per cent. positive results when re-examined after 12 months." From a tabular statement it appears that of 40 which received intramuscular salvarsanized serum (as well as intravenous arsenic) 12 were " alive and well " and of 48 which received intrathecal salvarsanized serum (and intravenous arsenic) 26 were " alive and well " after 12 months. [The figures are expressed as percentages for each stage.] After 22 months only 25 of the 214 were alive and well, but of the 25, 20 had been treated with intrathecal serum.

The patients treated in the Mbale district were re-examined in September, 1924 [see table in this *Bulletin*, Vol. 20, p. 334.] Of the 27, 5 had died and one case relapsed, and 21 remained alive and well, and gland and blood examination were negative, though from 3½ to 6 years had elapsed since they were found to be infected. The authors naturally sought the reason of the difference in curability between the Mbale and Madi natives. They find a twofold difference. In Mbale there was no risk of reinfection ; in Madi *palpalis* abounded on every stream. In Madi, yaws, syphilis, ulcers, etc., are wide-spread and the result of examination of the stools of 35 unselected natives was to show ankylostomes in 63 per cent. and other parasites in smaller proportion pointing to debilitating influence [but nothing is said of the infections or intestinal fauna of Mbale natives.] In a few cases they had good results from the use of tryparsamide.

A. G. B.

VAN DEN BRANDEN (F.). Le stibosan " préparation Heyden No. 471 " dans le traitement de la trypanosomiase humaine. [**Stibosan (Heyden 471) in the Treatment of Human Trypanosomiasis.**]—*Bull. Soc. Path. Exot.* 1926. Mar. 10. Vol. 19. No. 3. pp. 193–196. [1 ref.]

For the composition of stibosan see page 483 of this volume. Whereas the allied compound stibenyl does not seem of value in the treatment of human trypanosomiasis [*loc. cit.* Vol. 19. p. 881], stibosan is effective. Five patients were treated with a series of ten injections by the veins. Details are given. The trypanocidal action is less rapid than that of tartar emetic, to which it does not seem superior for chronic cases. The experiments are still in progress.

A. G. B.

BERGER (E.). Zur Kenntnis der trypanoziden Wirkung von " Peracrina 303." [**The Trypanocidal Action of " Peracrina 303."**]—*Deut. Med. Woch.* 1926. Mar. 5. Vol. 52. No. 10. pp. 394–395. [4 refs.].

Peracrina is a trypaflavin-albumen combination which contains 10 per cent. of trypaflavin : it has been used recently on a considerable scale for the treatment of malaria in Russia. In this note Berger describes his observations on the therapeutic action of the drug on mice infected with nagana. Experiments showed that, although in some cases mice of 20 gm. could tolerate feeding with 100 mgm. or even 150 mgm. of peracrina, the dose tolerated could be estimated at 50 mgm.

Comparative experiments on mice infected with nagana Prowazek and treated with 50 mgm. of peracrina on the one hand and 5 mgm. of trypaflavin on the other showed that trypaflavin gave much the more satisfactory results; the peracrina caused the disappearance of trypanosomes from the blood, but the parasites quickly reappeared and the animals died, whereas in those animals treated with 5 mgm. of trypaflavin there was no relapse within the observation period of 29 days.

W. Y.

KUHN (Philalethes). Weitere Mitteilungen ueber die Wirkungen der verschiedenen parenteralen Einverleibungsarten löslicher Antimonsalze bei der Durineinfektion der Maus. **[The Effects of Different Methods of Parenteral Administration of Soluble Antimony Salts on Dourine Infection in Mice.**—*Arb. a. d. Reichgsndhtsamt.* 1926. Vol. 57. pp. 733–745. [5 refs.]

In a previous paper on dourine infection in mice the author showed that for tartar emetic, antimosan and Heyden 488 and 471 subcutaneous administration is superior to other parenteral methods, and the intramuscular route superior to the intravenous and intraperitoneal. The experiments on antimosan have been continued and others on stibenyl instituted. The antimony salts were dissolved in water and the quantity of solvent was varied. The protocols are given and several tables.

The results were as follows: With the quantity of stibenyl employed dourine-infected mice were not cured except by subcutaneous administration, which brings this drug into line with those named above. Though stibenyl is more effective subcutaneously it is not more toxic to the mouse. With antimosan the results of SCHNITZER were confirmed; the trypanosomes disappear after an hour and sooner than when the drug is introduced by other channels.

A. G B.

LAUNOY (Léon) & NICOLLE (Pierre). Documents pour servir à la détermination chez la souris des constantes de toxicité et d'activité trypanocide du novarsénobenzol. **[Data for the Determination in Mice of Constants of Toxicity and Trypanocidal Activity of Novarsenobenzol.]**—*C.R. Soc. Biol.* 1926. Sept. 21. Vol. 95. No. 27. pp. 614–616. [1 ref.]

Constant of Toxicity.—Numerical data are given to show that the lethal dose of arsenobenzol per kilo. for mice varies from 0·35 gm. to 0·45 gm., and the dose tolerated lies between 0·30 and 0·425 gm., these figures appearing to show that the sensitivity of the mouse to intravenous injections of novarsenobenzol is less than that of the rabbit.

Trypanocidal Activity.—This was studied with *T. equiperdum* and *T. brucei* from the Institut Pasteur, Paris. The data show that a virus fixed for the mouse, such as the strain of *T. brucei* in question, is very sensitive to the trypanocidal action of novarsenobenzol. But *T. equiperdum*, the virulence of which is variable, shows itself more resistant to the drug. From this we may conclude, they write, that there is not "a" trypanocidal action of novarsenobenzol, but several trypanocidal actions. They think that this point has been insufficiently stressed.

A. G. B.

LEWY (F.) & GUREWITSCH (M.). Gewinnung und Eigenschaften von parafuchsinfesten Trypanosomen. [**The Production and Properties of Parafuchsin-fast Trypanosomes.**]—*Ztschr. f. Hyg. u. Infektionskr.* 1926. Sept. 11. Vol. 106. No. 3. pp. 532–537. [10 refs.]

Conclusions.—(1) A trypanosome strain (Nagana, Prowazek) made fast experimentally to parafuchsin has *in vivo* a maximal insensitiveness to this dye with both subcutaneous and oral administration. (2) The fastness is specific: salvarsan, trypaflavin, tartar emetic and " Bayer 205 " have the same action on the parafuchsin-fast strain as on the normal strain. (3) In contrast to the strain described by ROEHL* the parafuchsin fastness produced extends also to the more active tryparosan (chlorinated parafuchsin). On the other hand, the feeble trypanocidal action of two ethylated or methylated Triphenylmethane dyes (brilliant green and pyoktanin) on the fast strain is of importance.

A. G. B.

EDWARDS (J. T.). **The Chemotherapy of Surra** (*Trypanosoma evansi* **Infections) of Horses and Cattle in India.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. Mar. 18 & May 20. Vol. 20. Nos. 1 & 2. pp. 10–71. With 1 diagram, 2 figs. on 1 plate & 12 charts. [97 refs.]

This paper is, of course, of chief interest to veterinarians, but it should be read by all concerned with the treatment of human trypanosomiasis. As regards horses, the author found " Bayer 205 " superior to tartar emetic, bismuth compounds and tryparsamide. The following passage will doubtless find its application in the disease of man :—

" The lack of diffusibility of the drug [" Bayer 205 "], however, operates adversely in one important respect, namely, in that it is unable to penetrate the subarachnoid space in trypanocidal concentration ; hence, although prolonged sterilization of the circulatory system may be effected by the administration of a single intravenous dosage, in well-established cases of infection the trypanosomes meanwhile multiply, as has been proved by experimental observations, in the safe retreat afforded by the cerebrospinal canal, and the animal may ultimately succumb from surra affecting purely the central nervous system. This detect may be counteracted by the introduction of ' Bayer 205 ' simultaneously with the intravenous injection, intrathecally, in very dilute solution, in a dosage arithmetically equivalent to that introduced intravenously having regard to the relative weights (about 1 : 500) of the tissues affected by the introduction of the drug into the two channels."

In the treatment of man intrathecally the dosage seems to have been always calculated on the total weight or blood volume.

A. G. B.

HALFER (Giuseppe). Sulla chemioterapia moderna della tripanosi. [**Modern Chemotherapy of Trypanosomiasis.**]—*Arch. Ital. Sci. Med. Colon.* Tripoli. 1925. Sept.–Oct. Vol. 6. No. 9–10. pp. 118–123. [37 refs.]

The effect of " Bayer 205 " on trypanosomes varies with the strength of the drug. After injection of a 7·5 per cent. solution the parasites lost all motility in 20–25 minutes, with a 10 per cent. solution within 5 minutes; above 10 per cent. trypanolysis resulted. In animal experiment, infected rats after injection of a 1 : 20,000 solution (0·5 cc. per 20 gm. body-weight) never showed any subsequent relapse; with a solution of 1 : 40,000 relapses occurred. A single dose, therefore, if of the right strength, can bring about a "sterilisatio magna."

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* *Ztschr. f. Immunitätsf. u Experim. Therap.* 1908. Vol. 1. p. 70. Tryparosan caused the trypanosomes to disappear for some days in the case of a strain which by three years' treatment had been made as resistant as possible to parafuchsin (see *Sleeping Sickness Bulletin.* Vol. 1. p. 156).

As regards the results in sleeping sickness: In the first period, that of fever, erythema and oedema, lasting cure is nearly always effected by three injections (on the 1st, 10th and 27th days of the month) of 1·2 gm. in 5 cc. normal saline. In the second period, of glandular enlargement, the same procedure is recommended. In the third, that of tremor, paresis, hyperaesthesia, the course should be repeated after an interval of a month.

H. Harold Scott.

KRAUS (R.). Die Chagaskrankheit, Kropf und Kretinismus in Südamerika. [**Chagas Disease, Goitre and Cretinism in South America.**]—*Wien. Klin. Woch.* 1926. Apr 1. Vol. 39. No. 14. pp. 378–382.

In this paper the view of CHAGAS that goitre in Brazil is a symptom of trypanosomiasis is combated and the objections to this and other statements of CHAGAS are set down with full illustration and argument. As the paper has interest as well as importance it must be treated in some detail. CHAGAS maintains the theses that where there are no Triatomas in the houses there is no goitre, that in Brazil there are no trypanosomiasis districts where goitre is not found, and that endemic goitre and Chagas disease are the results of infection with trypanosomes which are conveyed to man by Triatoma.

The author with his colleagues has been studying this question in Argentina for some years and has reached the following conclusions: (1) In the mountain districts of Argentina there are Triatomas (*T. megista*) infected with *T. cruzi*. In some parts of these districts goitre and cretinism are found corresponding with the classical picture of these affections in Europe; acute cases of Chagas disease have not been established either clinically or experimentally. (2) In the Chalchaqui valley in the same region neither goitre nor cretinism is found in spite of a large number of infected bugs. (3) Nor are these affections met with in the provinces of Buenos Aires and Cordoba though infected Triatoma occur there also. (4) In Argentina infected Triatoma produced neither acute nor chronic Chagas disease.

He refers to MÜHLENS' discovery of two cases of trypanosomiasis in Tucuman and Jujuy provinces [see this *Bulletin*, Vol. 22, p. 621], and to a third case recorded by DIOS, ZUCCARINI and OYARZABAL [*ante*, p. 426], all in children. None of these had the symptoms of acute Chagas disease.

The author goes on to the question of the occurrence of Chagas disease in other South American countries. CHAGAS's own investigations were made in a mountainous district of Minas Geraes and none have been made in the plains. CARINI and MACIEL, in the adjacent State of São Paulo inoculated several guineapigs with the blood of persons suspected of trypanosomiasis and in the muscles of one animal found cyst forms; BAYMA describes a case in the same State. With these exceptions no cases of Chagas disease have been described in Brazil since the original investigation of 1909. In other States the disease has been sought but not found. So that there is a contradiction between the frequency of infected bugs and the rarity of the disease, which the author says is new to him in the epidemiology of insect-transmitted disease. [He does not mention what is perhaps an analogous case, the occurrence over wide areas of infected *G. morsitans* and the comparative rarity in man of infection with *T. rhodesiense.*]

ESCOMEL'S case of human trypanosomiasis in Peru is mentioned, and the improbability of the parasite being *T. cruzi*, (this *Bulletin,* Vol. 15, p. 384; Vol. 16, p. 368), and 2 cases of TEJERA in Venezuela, the details of which the author has not seen. [Three cases are recorded in children of 9 months and 2 years, and a girl of 17; in one instance the parasites were "morphologically identical" with *T. cruzi, l.c.,* Vol. 15, p. 384.]

From the clinical side it is difficult to distinguish endemic goitre and cretinism from the clinical picture of the acute and chronic infections depicted by CHAGAS. According to MUNK, in the district where CHAGAS made his discovery, 75 per cent. of the indigenous population have goitre and every family its cretin, dwarf or paralytic. It is questioned whether these conditions are due to the trypanosomiasis, and another difficulty is that in the chronic form of Chagas disease trypanosomes are no longer found in the blood. It follows that Chagas disease and endemic goitre overlap in their distribution. An endeavor should be made to find cases of trypanosomiasis in regions of Brazil or Argentina free from goitre and where infected Triatoma are present. [Kraus seems to have made out a good case for further enquiry into American trypanosomiasis.]

A. G. B.

CHAGAS (C.). Quelques aspects de la trypanosomiase américaine. [**Some Aspects of American Trypanosomiasis.**]—*Rev. d'Hygiène.* 1926. Aug. Vol. 48. No. 8. pp. 694–702.

The bulk of the paper is occupied by a general description of the disease such as may be found in text-books.

Neurotropic strain of *T. cruzi.*—This strain was obtained by the inoculation to dogs of trypanosomes found in the armadillo (*Tatusia novemcincta*). The dogs almost invariably become paralysed. The parasite is found in the central nervous system and the inflammatory lesions correspond exactly with the motor symptoms; the lesions resemble closely those observed in the disease in man. The neurotropism is maintained in successive passages through laboratory animals as well as in artificial culture up to the 70th generation. It is preserved also after passage through the insect transmitter. It is not a matter of occasional paralyses such as may occur with any trypanosome infection, but of their constant occurrence. The strain is a very virulent one, giving rise to intense infection in animals Crossed immunity experiments have shown that inoculation of the neurotropic strain immunizes completely against the human strain, but infection by the human strain confers only a relative immunity against the neurotropic strain, and in these animals one does not see the nervous manifestations.

Hereditary transmission of *T. cruzi.*—VILLELA has demonstrated the presence of *T. cruzi* in the heart and nervous system of the new-born puppies of an infected bitch; cysts of the parasite were found in the placenta and uterine decidua. It is doubtful whether true heredity occurs, i.e., by infection of the spermatozoa and ova; transmission is more probably effected by contagion in utero. Intra-uterine transmission explains the frequency of cerebral diplegia in this disease, for meningo-encephalitis is rare.

Host of *T. cruzi* in nature.—The demonstration of the trypanosome in the armadillo's blood is of much importance. The armadillo is found throughout S. America in burrows far from or near human habitation. In the burrows was found *Triatoma geniculata*, a species allied to *T. megista*, containing forms of the trypanosome, and the inoculation of these parasites to animals produced infections identical with those produced by inoculation from man. The armadillo is evidently the primitive host. When the armadillo abandons its earths, the bugs come sometimes to human habitations. The parasite in the armadillo is found in the same situations and produces the same lesions as it does in man.

A. G B.

MAZZA (Salvador). Caso de esquizotripanosis humana observado en la ciudad de Jujuy. (Nota preliminar). [**A Case of Human Trypanosomiasis in Jujuy City.**]—*Bol. Inst. Clin. Quirúrg.* Buenos Aires. 1926. Apr. No. 11. 6 pp. With 3 figs. & 2 coloured figs. on plates.

——. Cas de trypanosomose humaine observé dans la ville de Jujuy.—*C. R. Soc. Biol.* 1926. Sept. 21. Vol. 95. No. 27. p. 815.

The author says that four cases of *T. cruzi* infection, all in children, have been recorded in Argentina. In the study of the malarial index in 507 persons in the town of Jujuy *T. cruzi* was found in thick drop in the blood of a woman aged 27. Citrated blood was inoculated to 2 mice and 2 guineapigs, and 17 days later in one of the mice a few trypanosomes were seen. The patient had a visible goitre, slight exophthalmos, pulse 110 of low tension, asthenic habit, emaciation, pallor of mucosae, enlarged liver and spleen ; there was no oedema or myxoedema, and no gland enlargement. A month later trypanosomes were not seen in the blood, but subtertian gametocytes were present. There was melanoderma of the face and Sergent's white line (probable suprarenal implication). She was suckling a child of 6 months, whose blood did not show trypanosomes. A girl of 4 years had a goitre, facial myxoedema and moderate splenomegaly, and subtertian gametocytes, but no trypanosomes. A child of 2½ had a large spleen, numerous schizonts and gametocytes (subtertian), but no trypanosomes In the patient's house were found Triatoma, the posterior intestine of which contained " flagellates of the metacyclical trypanosome type." In the first paper there are photographs of the patients and good coloured plates of the trypanosome.

A. G. B.

URIBE (Cesar). **A New Invertebrate Host of** *Trypanosoma cruzi* **Chagas.**—*Jl. Parasit.* 1926. June. Vol. 12. No. 4. pp. 213–215. With 1 text fig.

The summary runs as follows :—

" An adult female *Apiomerus pilipes* Fabr., was found in association with *Rhodnius prolixus* in a shack near Trujillo, Venezuela, S.A. This Reduviid, which fed readily upon *Rhodnius prolixus* Stahl, and also upon *Musca domestica* Linn , refused to suck blood from newly-born white rats, and also from man.

"Dying after several feedings upon body juices and apparently upon the intestinal contents of *Rhodnius prolixus* which contained *Trypanosoma cruzi*, its intestinal contents showed a very heavy infection with flagellates morphologically identical with the forms of *T cruzi* found in *R prolixus* Daily examination of its feces had not shown flagellates of any description

'While little was learned of the biology of *A pilipes*, it is clearly indicated that it feeds upon *Rhodnius prolixus*, with which it was found associated, rather than upon vertebrates and that it may serve as a host of *Trypanosoma cruzi* "

A G B

KROÓ (H) Weiterer Beitrag zur Immunbiologie der Trypanosomen Zur Kritik des Kreuzinokulationsverfahrens als immunbiologische Methode der Artabgrenzung [**Crossed Inoculation as an Immunobiological Method of Distinction of Species.**]—*Ztschr f Hyg u Infektionskr* 1926 Mar 18 Vol 106 No 1 pp 77–82 [2 refs]

The author has recently discussed the difficulties of separating the species of the pathogenic trypanosomes Two methods have been advised, that of crossed immunization introduced by LAVERAN, and that proposed by KLEINE in which the trypanosomes of a naturally infected animal are introduced, if possible without mediate passage, directly into as many animal species as possible In the diagnosis are considered both the morphology and the natural pathogenicity In the work referred to three laboratory strains of *T brucei* of different origin when compared in such an experiment, behaved differently, as if they were three separate species The author describes LAVERAN's method and gives an excerpt from a paper written by him in 1907, in which a goat infected with *T pecaudi* was judged to have become immune to that species, because sensitive subinoculated animals ceased to become infected, but was afterwards infected with *T dimorphon* with the conclusion that *pecaudi* and *dimorphon* are different species The author remarks that *T dimorphon* was originally obtained by DUTTON and TODD from a horse in Gambia [not Senegambia], was maintained in experimental animals for three years in Paris, and finally examined in a sheep for its specific identification

In the author's own experiments a strain of *T brucei* " Prowazek " was inoculated from a mouse subcutaneously into an ox, two sheep, a dog, a rabbit and a guineapig Four weeks later, blood was taken from each animal and put back into mice, which received such a dose of arsacetin on two consecutive days as sterilized their blood They were then inoculated in groups of six with the same and each of the other strains The experiments were fully controlled The result was that all the strains compared with one another and with the original mouse strain in the crossed immunity experiments were different Thus mice which were immune to the ox strain were reinfected by the sheep, dog, rabbit and guineapig strain and so forth Two tables are given in illustration 36 mice were employed in each Moreover, even the two sheep strains were shown to be immunologically different The results show that LAVERAN's method for identification of species must be used with great caution KLEINE's view is that strains met with under natural conditions are relapse strains, trypanosomes introduced by the bite of the tsetse are at once modified by the body defences.

A. G B.

LANDSTEINER (K) & VAN DER SCHEER (J) **Experiments with Trypanosomes in Relation to the Wassermann Reaction.**—*Proc Soc. Experim Biol & Med* 1926 May Vol 23 No 8 pp 641–644 [6 refs]

One set of rabbits was treated with dead trypanosomes, another with a small dose of living trypanosomes (? *T equiperdum*) A table records the Wassermann results one month after infection, or after 4 to 7 injections of dead trypanosomes Strong reactions were obtained in each instance, and it is noted that dead trypanosomes are powerful agents for inducing the formation of Wassermann reagins

A G B

CHU-JEN KU Ueber Komplementbindungsreaktionen bei Kaninchen-Trypanosomiasis [**Complement Fixation Reactions in Trypanosome Infection of Rabbits.**]—*Ztschr f Immunitatsf u Experim Therap* 1926 Apr 8 Vol 47 No 1 pp 17–39 [51 refs]

The many details of a careful investigation given in this paper hardly permit of useful abstract The author recounts the observations of many (named) investigators, establishing the close similarity in the symptoms, and lesions of skin and nervous tissues of men and lower animals, infected with syphilis and trypanosomiasis respectively Many workers have demonstrated a positive complement fixation reaction in the serum of rabbits infected with syphilis and with different trypanosomes respectively Such a serum reaction has been shown also to occur in the *mal de coit* of horses A careful précis of these various observers' experimental results and observations is given Full details are given of the author's own experiments, with tables setting out his results Following Von DAHMEN s technique for *mal de coit* of horses, the author found that with very exact titration of reagents, and the use of an alcoholic-trypanosome extract as antigen, while no unspecific positive reactions were given by the blood serum of healthy rabbits the blood serum of trypanosome infected rabbits constantly gave a positive reaction.

H M Hanschell

NEUMARK (Eugen) & POGORSCHELSKY (Herbert) Die Bedeutung der trypanociden Wirkung des Blutserums von Sauglingen [**The Significance of the Trypanocidal Action of the Blood Serum in Sucklings.**]—*Ztschr f Kinderheilkunde* 1925 Dec 31 Vol 40 No 5 pp 535–551 [14 refs]

The work described in this paper is along the same lines as that of ROSENTHAL and FREUND and others previously noticed in this *Bulletin*, (Vol 20, p 700, Vol 22, p 143) The conclusions, which confirm those of the earlier workers, are as follows —

1 Healthy sucklings in the first week of life have no observable amount of trypanocidal substance in their blood serum

2 As age increases trypanocidal substances appear in the blood serum, and, as a rule, they are well-developed between the eleventh and fifteenth week of life

3 If the children become ill with any febrile infection, a decrease in the trypanocidal power of the serum is demonstrable

4. Weakly children exhibit a corresponding decrease in the trypanocidal power of the blood serum.

5. In some cases of pronounced Barlow's disease and of premonitory cutaneous haemorrhages the established diminution in the trypanocidal substances was due to accompanying, or shortly preceding, infections.

W. Y.

NAMIKAWA (Hiroshi). **An Experiment on Congenital Infection with** *Trypanosoma.—Taiwan Igakkai Zasshi (Jl. Med. Assoc. Formosa).* 1926. Jan. No. 250. English summary pp. 6–7. [In Japanese.]

Three pregnant mice were inoculated with a strain of *T. gambiense* which had been maintained in mice; after 3 days, the animals were killed and the uterus, placenta, and embryo examined for trypanosomes in smears and sections. All were found to be infected, and consequently it is concluded that congenital infection can take place.

W. Y.

SCHUBERG (A.) & BÖING (W.). Ueber den Weg der Infektion bei Trypanosomenerkrankungen. [**The Track of Infection in the Trypanosomiases.**]—*Arb. a. d. Reichgsndhtsamt.* 1926. Vol. 57. pp. 785–800. With 4 text figs. [29 refs.]

In 1913 these authors showed that when blood containing trypansomes (*T. lewisi* and *brucei*) is inoculated intracutaneously into an experimental animal the parasites quickly pass into the lymph spaces of the corium, multiply in these and the subcutaneous connective tissue, and so reach the neighbouring lymphatic glands where they increase abundantly; they are demonstrable in the glands of the same side of the body in large numbers before they are found in the blood. It was concluded that these species are to be regarded not only as blood parasites, but in no small degree and primarily as parasites of the lymphatic system (this *Bulletin*, Vol. 2, p. 126). Here they go more fully into the matter, give some instructive illustrations and oppose the dictum of REICHENOW that the blood is primarily affected and afterwards the lymphatic system [*l.c.*, Vol. 21, p. 54].

An area of skin of about one square centimetre was penetrated by some 20 pricks of the finest entomological needles, drops of trypanosome-containing blood mixed with equal parts of 5 per cent. citrate solution were left in contact with it for 5 to 30 minutes, the rat was killed and the piece of skin fixed, embedded and sectioned. After staining by Giemsa the prick tracks could be recognized, and the behaviour of the trypanosomes determined. In other instances, by means of fine cannulas intracutaneous injections were made, in imitation of the natural introduction by insect bite, into the corium, though it was not always possible to exclude contamination of the subcutaneous tissue. Animals were killed daily for examination. The *T. lewisi* experiments, which are described separately, were made by both methods; the *T. brucei* experiments by the intracutaneous method. The result of the latter after inoculation in the right thigh was infection of the glands in regular and unvarying order—right inguinal, right axillary, left axillary, left inguinal; later after 3 days, trypanosomes could be found in the tail blood. By gland infection is understood infection of the lymph spaces, not of the contained blood vessels. All the experiments showed that the spread of infection from the place of inoculation takes place in the first instance by the lymphatics.

The remainder of the paper concerns REICHENOW'S objection to their former work and his criticism that their method of inoculation does not correspond with the natural method which consists in the sinking of the proboscis into a blood vessel and the escape of parasites into the blood. They do not concur and they maintain their view that at the commencement of infection the trypanosomes of these species are primarily parasites of the lymphatic system.

A. G. B.

BATTAGLIA (Mario). Experimentelle Nephritis und Hepatitis durch *Trypanosoma brucei.* [**Nephritis and Hepatitis from the Experimental Inoculation of** *T. brucei.*]—*Cent. f. Bakt.* I Abt. Orig. 1926. Aug. 20. Vol. 99. No. 6. pp. 468–469. 6 refs.]

A short paper in which the author describes lesions of the kidney and liver in rabbits injected in series with a strain of *T. brucei.*

A. G. B.

IVANOFF (E.). Le sort des trypanosomes (*T. brucei* et *T. pecaudi*) dans la cavite generale de *Galleria mellorella.*—*C. R. Soc. Biol.* 1925. Aug. 14. Vol. 93. No. 27. pp. 571–572. [1 ref.]

LEGER (Marcel). La maladie du sommeil dans nos colonies de l'Afrique equatoriale.—*Paris Med.* 1926. Feb. 13. Vol. 16. No. 7. pp. 154–155.

STEUDEL. Die Schlafkrankheit in Togo – ein deutscher Bluff?—*Der Kolonialdeutsche.* 1926. Vol. 6. No. 9. p. 141–142. With 1 fig.

TROPICAL OPHTHALMOLOGY:

A REVIEW OF RECENT ARTICLES.—VI.*

THE CONJUNCTIVA.—R. E. WRIGHT[1] has reported a case of an obscure conjunctival inflammation which bore some resemblance to Parinaud's conjunctivitis. The patient was a Hindu, aged 32, and occupied as a fireman on a railway engine. A month previous to admission to hospital the affected eye had been injured by a spark from the furnace. There was a history of syphilis; and, though a von Pirquet test was positive, clinical signs of any tuberculous lesion were absent. The conjunctival lesion showed large, coarse, polypoid granulations with greyish-yellow areas free from ulceration. Eventually the granulations invaded the cornea and destroyed it. Except for a temporary enlargement of the preauricular gland there was no sign of lymphatic involvement. Constitutional symptoms, too, were negligible. Anti-syphilitic and anti-tuberculous treatments were of no avail.

G. R. HARE[2] met with a case of subconjunctival echinococcal cyst. It appeared as a globular, greyish, cystic tumour about the size of a pea, and was situated over the insertion of the internal rectus muscle. The overlying conjunctiva was slightly injected but quite freely moveable. The cyst was removed through an incision in the conjunctiva, and was proved by pathological examination to be echinococcal.

P. DURAND and UGO LUMBROSO[3] state that the Koch-Weeks bacillus bears the closest analogy to the Pfeiffer bacillus, and that the bacteria can be differentiated neither by their morphology nor even by their biochemical and serological reactions. The Weeks bacillus is pathogenic to the human conjunctiva only. It may be found in the normal conjunctival sac, and it may be present in trachoma, even when the disease is quiescent. Even after six years laboratory growth, experimental inoculation of the culture produces the typical conjunctival inflammation in man. Yet the possibility of a natural immunity is shown by the fact that an inoculation on two different individuals, made from the same stock, at the same time, and under apparently identical conditions, may be successful in one case and not in the other.

An epidemic of acute conjunctivitis, which occurred in Tucupita (Venezuela) during the season August to November, has been described by J. RHODE[4]. Staphylococci and streptococci were found in the discharge, but the origin of the disease remained obscure. There was much conjunctival injection, lachrymation, and a purulent discharge with oedema of the lids. The cornea was unaffected, and a lotion containing sulphate of zinc and adrenalin, with an ointment of one per cent. yellow oxide of mercury, cured the complaint in the course of a few days.

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* For the fifth of this series see Vol. 23, pp. 459–468.

[1] WRIGHT (R. E.) Obscure Affection of the Conjunctiva resembling Cases of Parinaud's Syndrome.—*Arch Ophthalm.* 1925. Sept. Vol. 54. No. 5. pp. 423–425.

[2] HARE (George R.) A Case of Subconjunctival Echinococcus.—*Arch. Ophthalm.* 1926. July. Vol. 55. No. 4. pp. 367–369. With 3 figs. on 1 plate. [10 refs.]

[3] DURAND (Paul) & LUMBROSO (Ugo) Quelques caractères du bacille de Weeks. Ses rapports avec le bacille de Pfeiffer.—*C.R. Soc. Biol.* 1926. June 4. Vol. 94. No. 19. pp. 1322–1323.

[4] RHODE (Jesús). Observaciones oftalmológicas.—*Rev. Med. y Cirug.* Caracas. 1926. May. Vol. 9. No. 98. pp. 82–91.

Trachoma The flow of literature concerning trachoma continues as freely as ever, but the problems of the disease remain unsolved Hopeful features are (1) there is evidence of a growing realization that diagnosis may sometimes present difficulties, and (2) there are occasional suggestions that the conjunctival changes associated with the condition may not in all cases be due to the same specific virus. Thus Ch NICOLLE and U. LUMBROSO[5] note that a naturally granular state of the conjunctiva may be present in rabbits and in some other animals otherwise suitable for laboratory experiment This condition, of course, complicates the question of experimentally produced trachoma, but the authors suggest that it may throw light upon the origin of the disease since such animals are specially exposed to contamination from the soil The variability of the reaction produced in these animals by the inoculation of trachomatous matter obtained from human sources has led them to think that the virus in man may vary in its activity or in its nature They suggest that the virus of trachoma may be telluric in origin, and may consist of different varieties one of which undergoes a special adaptation to the conjunctiva, and is then passed directly from eye to eye Later, however, NICOLLE[6] insists upon the absolutely specific nature of the disease and states that the occurrence of other infections merely serves to draw attention to the presence of trachoma, which they do not cause Considerable progress has been reported, especially by the French Colonial Authorities, in the prevention of the spread of trachoma by the use of propaganda and by inspections of the schools One gathers from their reports that the disease, mostly of a mild type, is extraordinarily rife amongst schoolchildren in the French colonies It is well to remember, however, that, in the eyes of young people, conjunctival changes associated with follicle formation may result from various kinds of irritation

The forms of treatment recommended by most of the writers are mostly variations of old and well-known methods But Madame E DELANOË[7] has added another, viz chaulmoogra oil, to the existing long list of remedies She has found this most satisfactory, and claims that treatment for eight or ten days suffices to cure the worst cases, an immediate improvement following the first application An irritating soapy matter forms in the conjunctival sac and this should be carefully sponged off with pledgets of wool soaked in a hot lotion The treatment is said to be almost painless if this precaution is observed She says that she found trachoma very rife in Morocco Mohammedan children are heavily infected (40 per cent), whereas Jewish children are much less so (5 per cent) She attributes this to the fact that the Jews attend government schools where they are subject to medical inspection and good hygiene Mohammedan children, on the other hand, are exposed to the worst possible conditions in their schools The disease is much more prevalent amongst the Jewish adults than amongst their better cared for children A. H MILLET[8] considers that an acute stage of

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[5] NICOLLE (Ch) & LUMBROSO (Ugo) Origine et conception du trachome—*Revue Internat du Trachome* 1926 July Vol 3 No 3 pp 71–74

[6] NICOLLE (Ch) A propos d un mémoire du Dr F Motais "Trois années d'Ophthalmologie en Indo-Chine"—*Revue Internat du Trachome* 1926 July Vol 3 No 3 pp 75–76

[7] DELANOË (E) Etude sur le trachome au Maroc et son traitement—*Bull Soc Path Exot* 1926 Jan 13 Vol 19 No 1 pp 49–62 [18 refs]

[8] MILLET (A H) La poussée aiguë de trachome—*Arch Méd et Pharm. Milit* 1925 Dec Vol 83 No 6 pp 540–542

trachoma does occur, and that it is characterized by an acute inflammation of the anterior segment of the eyeball in which a serous iritis plays the chief part. Those observers who hold that an acute stage in trachoma mostly results from a secondary infection are unlikely to accept his conclusions in their entirety. An excessive use of atropine, such as he favours, may sometimes prove harmful and may increase the conjunctival irritation. The same writer[9] states that in Oran those persons in whom naso-pharyngeal adenoid tissue tended to persist to a late age were the most likely to be affected by trachoma. He argues that there is an intimate relation between trachoma and the presence of adenoid vegetations, and that trachoma is an inflammation of the palpebral adenoid tissue which is induced by repeated untreated, or badly treated, attacks of non-specific conjunctivitis in subjects whose adenoid tissue has failed to undergo involution.

NICOLLE and LUMBROSO[10] have recorded, rather more particularly than in the paper already referred to, the characteristics of certain granular changes common in the eyes of rabbits and of some small monkeys, and have remarked how easily such changes may be confounded with trachoma. It is stated that a follicular condition of the conjunctiva may be considered to be almost normal in some breeds. The follicles undergo marked development in response to even the mildest irritation. Simple scarification of an eye not only induces an intense folliculosis of the injured conjunctiva, but also affects the membrane of the other eye in the course of a few days. The authors conclude that: (1) only the chimpanzee and the baboon should be used for making researches on trachoma; (2) a study of non-trachomatous granular conditions of this kind may help to throw light on some of the problems presented by human trachoma; (3) the rabbit, an animal which is specially liable to follicular inflammation, is much exposed to ocular infections from the soil. The authors suggest that, though trachomatous infection may pass from man to man directly, or through the agency of flies, yet it also has affinities for the soil, and it may be hoped favourably to influence the spread of the disease by preventing infection from the earth.

FEIGENBAUM[11] has observed that in many cases of monocular trachoma there was some form of nasal disease on the affected side. Lowered nutrition was also present. Early nasal treatment is important in these patients.

B. F. ROYER[12] is inclined to support the view of J. A. STUCKY that diet deficiency may prove to be an important aetiological factor in trachoma. Arguing from the analogy of xerophthalmia he suggests that a deprivation, just insufficient to cause keratomalacia, may so injure the conjunctival resistance that common, mild causes of irritation can produce characteristic trachomatous pathological changes in the membrane. The influence of bad hygiene upon the spread of trachoma is demonstrated by the vivid description of conditions in Russia given by W R DEAR[13]. Prior to the revolution the old Russian government made a constant effort to increase and to improve ophthalmic hospitals, and paid particular attention to training ophthalmologists. But even then there was a dearth of facilities and from 17 to 33 per cent of the population of the Volga basin was infected by trachoma The ravages of the revolution, with the consequent elimination of the intelligentsia, and spread of famine and epidemic disease have rendered medical aid still more difficult to procure The Chouvash Republic has a population of about one million, and 75 per cent now suffer from trachoma In some districts the entire population was affected The author estimates that of this million persons, 75,000 are incapacitated from work by partial blindness caused by the disease He found, however, that the peasants were surprisingly receptive to new ideas, especially those which concerned modern sanitation

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[9] MILLET (A. H.). Trachome et végétations adénoides.—*Arch. Méd. et Pharm. Milit* 1925 Dec Vol 83. No. 6. pp. 543–548.

[10] NICOLLE (Charles) & LUMBROSO (Ugo). La conjunctivite granuleuse du lapin et l'origine du trachome.—*C.R. Acad. Sci.* 1926. May 10. Vol. 182. No. 19. pp. 1116–1118

[11] FEIGENBAUM (Arieh). Ueber die Beziehungen des Trachoms zu Nasenleiden und die Frage des einseitigen Trachoms.—*Klin. Monat. f. Augenheilkunde.* 1925. Mar.–Apr Vol. 74. pp. 392–403. [20 refs.]

[12] ROYER (B. Franklin). Is Trachoma a Deficiency Disease? An Hypothesis for Public Health Consideration.—*Jl. Amer. Med. Assoc.* 1926. Aug. 1. Vol. 87. No. 7. pp. 482–485.

ROLLEMBERG SAMPAIO[14] reports that he has found ABADIE's treatment (galvano-puncture of the upper fornix) to be most useful.

CORNEA.—SCHWARTZ[15] has reported a case of *keratomalacia* which presented some points of interest The patient was an infant subject to intestinal disorder It had been breast-fed, but for a period of twenty-two days its diet had been restricted to oatmeal water and Mellin's food The ocular condition was typical and some cerebral symptoms were present The diet was changed to whole lactic acid milk with orange juice and cod-liver oil The latter was administered hypodermically in doses of 1 cc Recovery took place with the loss of one eye The author refers to McCOLLUM's experiments which indicate that other factors in addition to the amount of fat soluble A contribute to the causation of the disease , and that the total amount and composition of salt mixture are important Clinical experience in South India rendered this evident to the reviewer many years ago , and it was believed that, in addition to the cod-liver oil a mixture containing the chlorides of sodium, calcium, and ammonium was of value Children, whose condition precluded the oral administration of cod-liver oil, were treated with inunctions, and, if breast-fed by giving the oil to the mother It is an interesting fact that children aged two years and over who were still being suckled appeared to be especially liable to the disease

LENS —*Cataract* There is but little to record in connexion with this subject A E DAVIS[16] has reported 187 cases of cataract treated by injections of lens antigen It is claimed that the disease was arrested in 31·5 per cent , and arrested and improved in 52·2 per cent , whilst 18·1 per cent deteriorated He gives a daily injection and increases the dose by half or 1 cc until the full dose is reached, i e , 8 cc for a woman and 10 cc for a man Fifty doses constitute a course of treatment, so that the latter lasts for a period of about two months. If symptoms of intolerance appear, e.g., dizziness, pain or nausea coming on a few moments after the injection, the dose is lessened for about ten days and then again increased. Potassium iodide is given by the mouth during the course. KERR, HOSFORD and SHEPARDSON[17] are disposed to regard favourably the use of thyroid extract in the treatment of senile cataract. Having summarized the opinions of different observers with regard to the aetiology of the disease, they concluded that "senile cataracts represent the local [degenerative] changes in the lens of individuals who are the subjects of general degenerative disturbances." Thyroid extract improved the general health of most of the patients to whom it was given; whether the improvement in vision and the disappearance of lens opacities, which occurred in some cases, were caused by the better state of health or by a specific action on the lens of the thyroid substance, the authors are unable to state. Twenty-eight cases are recorded; of these 35·6 per cent. showed improvement; 35·6 remained unchanged; and 28·8 per cent. became worse under treatment. The authors recognize that it is very difficult to prove the value of any therapeutic procedure in the treatment of cataract, since some opacities may remain stationary for years, or may even clear up without any treatment. They suggest co-operation between physician and oculist in the interests of the patient.

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[13] DEAR (W R) Trachoma in Russia —*Milit Surgeon* 1926 June Vol 58 No 6 pp 611–619 With 3 figs

[14] ROLLEMBERG SAMPAIO (J M) Tratamento do trachoma rebelde , methodo de Ch Abadie —*Sciencia Medica* 1926 July 31 Vol 4 No 7 pp 332–335

[15] SCHWARTZ (A B) Nutritional Keratomalacia Report of Case —*Jl Amer Med Assoc* 1925 Vol 85. No 26 pp 2025–2027. With 1 chart in text [21 refs]

[16] DAVIS (A Edward) The Lens Antigen Treatment of Cataract, with a Further Report of Cases and Results —*Trans Ophthalm Soc of United Kingdom* 1925 Vol 45 Pt 1 pp 186–204

H. V. WURDEMAN[18] has furnished particulars of three unfortunate cases of *choroidal haemorrhage after cataract extraction* which occurred in his practice. In only one of these cases was the eye apparently healthy, save for the cataract, previous to operation. This was a man, aged 71, on whom an extraction in the capsule was performed. Vitreous showed at the operation, but none was lost. On removing the bandage three days later haemorrhage was found to have occurred. The author states that in such cases the blood invariably comes from a ruptured choroidal vein, and that "microscopical examination of such eye balls shows hyaline degeneration of the retina; the vascular walls of the uvea partly thickened; liquid vitreous, and retinal vessels very narrow." He refers to the experiences of W. A. FISHER and H. T. HOLLAND regarding the effect of a high intraocular pressure in the causation of the complication.

GLAUCOMA.—H. HERBERT[19] believes that many chronic simple glaucomas arise mainly, if not entirely, from a defective inward pull upon the pectinate ligament. In many eyes the combined pull exerted by the ciliary muscle and the zonule is inwards as well as backwards, and this serves to keep the interspaces of the ligament open. But in other eyes the pull is almost entirely backwards; and these are in consequence liable to glaucoma. In some cases, too, the canal of Schlemm is situated more deeply in the sclerotic than is usual, so that the influence of traction on the inner layers of the pectinate ligament is lessened. R. E. WRIGHT[20] remarks that the bulk of the primary glaucoma cases seen in the Madras Hospital may be placed in the congestive group; in many, however, signs of congestion are very slight. A high general arterial pressure is rarely seen in association with the disease. Wright thinks it likely that some pathological change in the vitreous humour may be a determining factor in the causation of this type of glaucoma. In collaboration with NEWCOMB he has carried out an investigation into the crystalloid content of vitreous obtained from 22 cases of advanced primary glaucoma. The crystalloid content, however, showed practically no differences from the normal; and the result of the investigation is held to indicate that the rise in ocular tension is unlikely to be caused by a general increase in osmotic pressure in the vitreous. But it does not dispose of the theory that a swelling of the colloids, due to an increased adsorption of salts with a consequent increased osmotic pressure in the interstices of the colloid meshwork, may be a factor in the causation of the disease. Subconjunctival injections of adrenalin were found to have but little influence in this type of glaucoma.

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[17] KERR (Wm. J.); HOSFORD (Geo N.) & SHEPARDSON (H. C.) Treatment of Senile Cataract with Thyroid Extract.—*Endocrinology.* 1926. Mar.–Apr. Vol. 10. No. 2. pp. 126–144. [57 refs.]

[18] WÜRDEMANN (Harry Vanderbilt). Expulsive Choroidal Hemorrhage after Cataract Extraction.—*Amer. Jl. Ophthalm.* 1926. June. Ser. 3. Vol. 9. No. 6. pp. 427–430. [11 refs.]

[19] HERBERT (H.). A New Glaucoma Theory.—*Trans Ophthalm Soc. of United Kingdom.* 1925 Vol. 45 Pt. 1. pp. 333–355. With 9 text figs.

[20] WRIGHT (R. E.). Section on Glaucoma of the *Administration Rep. Statistics & Professional Rep. Govt. Ophthalmic Hospital, Madras, 1925.* pp. 14–17.

OCULAR MUSCLES.—From his experience of a case in which the inferior rectus muscle was completely torn across by an injury, CRUICKSHANK[21] concludes that it is better to practise suture of an injured muscle as soon as chemosis and swelling of the lids have subsided rather than to postpone operation until the eye has become quiet. In the case referred to he waited for about nine weeks, and then found troublesome adhesions. Eventually, the patient did well and ceased to be troubled by diplopia.

ANAESTHESIA.—MARTIN D. ICOVE[22] advocates the use of intraorbital injections of novocaine and adrenalin to induce a full anaesthesia, and employs the technique described by the GREENS. A 2 cc. syringe with a needle 5 cm. long is used; and from a half to 4 cc. of a 4 per cent. solution of novocaine, to which a little adrenalin has been added, is injected about half-an-hour before the operation is begun. The skin is painted with iodine and the puncture is made through the skin at the junction of the lower and outer border of the orbit, between the external and inferior recti. The needle is thrust in fully, being directed slightly upwards and inwards so as to avoid striking the floor of the orbit. The entire quantity of fluid is injected before the needle is withdrawn. The tissues of young people are more resistant than those of elderly persons. When inflammation is present a greater quantity of fluid is required and a longer interval must be left before operating. Half a cc. is used for an ordinary cataract extraction, but 3 cc. at least are necessary in the case of glaucoma or of enucleation. Intraorbital haemorrhage is said to be exceedingly rare. This technique does not preclude the necessity for cocaine instillations or for novocaine injections into the orbicularis.

GENERAL.—JARLAND[23], discussing the frequency and the causes of blindness in Yunnan, states that both trachoma and phlyctenular ophthalmia are very widespread and the causes of much loss of sight. The prevalent insanitary conditions and deficient or improper dietary favour the spread of constitutional diseases, such as smallpox, which are likely to be accompanied by ocular complications. Inoculation against smallpox is more popular than vaccination; and this procedure endangers the sight of the subject and disseminates disease. Since blindness is so often due to a corneal opacity, much relief frequently may be afforded by an optical iridectomy. But seriously to lessen the number of blind people, it is necessary to attack the root causes.

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[21] CRUICKSHANK (M. M.). A Lesion of the Inferior Rectus: Treatment. Result.—*Indian Med. Gaz.* 1926. Aug. Vol. 61. No. 8. pp. 389–393. With 4 text figs. [2 refs.]

[22] ICOVE (Martin D.). Intraorbital Anesthesia.—*Amer. Jl Ophthalm.* 1926. Apr. Ser. 3. Vol. 9. No. 4. pp. 260–263.

[23] JARLAND. La cécité au Yunnan. Ses causes et sa prophylaxie.—*Ann. de Méd. et de Pharm. Colon.* 1926. Jan.–Feb.–Mar. Vol. 24. No. 1. pp. 223–33.

For the prevention of blindness in China, E. LOSSOUARN[24] advocates widespread propaganda. A league has been formed in Tientsin to teach the danger of delay in seeking advice and the harm done by irritant applications to the eyes, and also to organize treatment centres. Posters, pamphlets, cinemas, and missionary centres are to be used to diffuse knowledge. Many causes of blindness are found in a country in which elementary hygienic principles are neglected, and conjunctival inflammations with secondary corneal complications play a large part. Dacryocystitis is common; syphilis and smallpox, too, are responsible for much loss of sight. These conditions are much aggravated by dirty and irritant applications.

REPORTS.—The Reports of the Madras Government Ophthalmic Hospital, dealing as they do with carefully recorded statistics concerning very large numbers of patients, are always of the greatest value and interest; and that for the year 1925[25] is one of the best hitherto issued. 3,861 in-patients and 22,457 out-patients were admitted, whilst 3,258 operations were performed on in-patients and 1,283 on out-patients. The number of operations for *senile cataract* (1,359) is slightly lower than in previous years. This is accounted for; (1) by restricted admissions due to financial stringency, and (2) by the fact that the hospital has now educated a considerable number of able surgeons and facilities for ophthalmic aid are therefore more widespread. Extraction with a complete iridectomy was performed on 889 patients, with a peripheral iridectomy on 185, and the simple operation on 126. A rather high rate of iris prolapse was experienced—7·8 per cent. including impactions. But it is not stated if this was influenced by the type of operation performed. The complication was treated by instillations of eserine and picric acid and by the use of the actual cautery when necessary. *Juvenile cataracts* (primary cataracts other than zonular occurring in patients under 25 years of age) are estimated to constitute 0·1 per cent. of out-patient admissions. Few *zonular cataracts* were met with. Blocking of the facial nerve at its exit from the stylo-mastoid foramen was practised on patients who lacked self-control. A special syringe (the Alston washerless syringe) is used. "The needle is pushed through the skin in front of the mastoid process and is directed backwards and upwards grazing the deep aspect of the mastoid process, just below the tympanic plate. When the point of the needle is in the digastric fossa in the neighbourhood of the stylomastoid foramen the injection is made."

2,232 cases of *refraction error* were treated. *Disease of the optic nerve* constituted nearly half the cases in which disability was caused by fundus disease.

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[24] LOSSOUARN (Emile). La Prévention de la cécité en Chine—*Presse Méd* 1926. June 9. Vol. 34. No. 46. pp. 731–733. With 5 text figs.

[25] MADRAS. Administration Report, Statistics and Professional Rep. of the Govt. Ophthalmic Hospital, Madras for 1925. [WRIGHT (R. E.).]—34 pp. With 14 figs. on 2 plates. 1926 Madras: Govt. Press.

It is stated that milk injections appeared to have some value in the treatment of *ulcus serpens* and of many inflammatory conditions of the eye.

A recrudescence of *macular keratitis* seems to have occurred during the year, and 109 cases of the disease were recorded. Slit-lamp examination proved the bulk of the opacity to be situated about the middle of the substantia propria. Swelling was present and this caused a curving of the anterior corneal layers and a bulging of the posterior surface into the chamber. Keratic precipitates were absent; and any disturbance of the surface epithelium was rare. In no case could a breach of surface be demonstrated by staining. The other features, lack of irritation and vascular congestion, were as originally described, and the aetiology and treatment of the disease remain as obscure as ever.

Of 8,342 admissions to the out-patient department for conjunctival inflammations, 925 were due to *trachoma*, 2,192 to *Koch-Weeks infection*, 742 to *phlyctenular conjunctivitis*, 57 to *purulent ophthalmia* and 14 to *vernal catarrh*. The remarks concerning *glaucoma*, all varieties of which disease accounted for 314 admissions, have already been referred to.

The report also records some cases of special interest, amongst which are two cases of granuloma of the orbit caused by an aspergillus, and a peculiar form of epithelioma with cyst formation which occurred in a young subject. It furnishes eloquent testimony to the good work done in Madras by Major WRIGHT and his staff.

Another very valuable report is that of the Ophthalmic Section of the Egyptian Government for the year 1922[26]. It records many interesting facts and figures, and relates a history of progress which must be most gratifying to MACCALLAN and to all others responsible. In the year 1909 the total number of patients examined in the various ophthalmic hospitals in Egypt was only 22,273. The records show an almost continuous increase until, in the year under review, the number had reached 147,492. A most encouraging feature is the fact that more than half the necessary funds appear to be furnished by voluntary subscription. Turning to the report of the Clinical Section, glaucoma accounts for 1·7 per cent. of new admissions, and 969 operations were performed for the relief of this condition against 641 operations for senile cataract. This contrasts with conditions in India where senile cataract is probably at least three times as common as primary glaucoma. The great prevalence of serious conjunctival inflammatory disorders in Egypt may possibly be connected with this high incidence of primary glaucoma. Elliot's operation was that most often performed, and in this connexion the following paragraph may be quoted: "Secondary infections are extremely rare in Egypt, only 17 cases having been reported since 1911 out of 5,017 operations of trephining performed during this period."

The combined operation of extraction with iridectomy was the operation of election for senile cataract. In certain cases of complicated cataract a preliminary iridectomy was performed.

Conjunctival inflammations in Egypt reach their maximum frequency in June and July, the two hottest months, and gradually subside as the colder weather sets in. Membranous conjunctivitis is not uncommon, especially during the warmer months. It is stated that "it is quite impossible on clinical grounds to state whether or not a case of membranous conjunctivitis is due to the diphtheria bacillus or not. Another equally important point is that microscopical examination with an oil immersion objective of a stained film of the conjunctival discharge is without importance as regards an exact diagnosis. In several cases in which animal experimentation fully showed that the condition of infection with the bacillus diphtheria was present a careful examination of the discharge only showed the presence of an organism resembling the gonococcus, the Koch-Weeks bacillus, etc."

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[26] EGYPT. Ministry of the Interior. Dept. of Public Health. Tenth Ann. Rep. of the Ophthalmic Section, 1922.—48 pp. With 1 chart. 1926. Cairo: Govt. Press.

The great value of efficient school medical inspection and treatment is demonstrated by the fact that 52 per cent. of the scholars were found to have an opacity on one or both corneae in the year 1913, whereas in 1923 this was reduced to 13 per cent. 110,469 cases of trachoma and 11,305 of gonorrhoeal ophthalmia were treated during the year.

Only 17 patients suffered from retinitis—albuminuric, diabetic and syphilitic; but 61 were admitted for retinitis pigmentosa, and 64 for detachment of the retina. 270 cases of optic atrophy are recorded. Disseminated choroiditis was found in 26 cases, choroido-retinitis in 18, and atrophy of the choroid in 63.

H. Kirkpatrick.

YAWS AND SYPHILIS.

GULATI (D. D.). **Yaws in the Chin Hills.**—*Indian Med. Gaz.* 1926. May. Vol. 61. No. 5. p. 228.

Exception is taken to a statement made by P. BELL (*ante*, p. 19) that cases of yaws were being treated as cases of syphilis, and some notes are given to show that the disease found among these hill dwellers is really yaws and not syphilis. Among the statements made are the following :—"The primary sore may be present upon the angles of the mouth, the anus, or other parts, it has the appearance of a split pea" ; "the primary sore may also occur on the finger tips" ; "the tongue and fauces are not uncommon sites for the primary lesion in suckling infants." "In a few cases the secondary lesions [only eight cases of secondary disease seen] affect the mucous membrane of the mouth and fauces, sometimes even that of the tongue." [From such descriptions one is left in some doubt as to the real nature of the cases Sub-assistant Surgeon Gulati describes.]

H. S. Stannus.

DE ALMEIDA (Elpidio) & DE OLIVEIRA (Octavio). Algumas notas sobre a bouba na Parahyba—seu tratamento pelo "treparsol". [**Yaws in Parahyba—Treatment by Treparsol.**]—*Brazil Medico.* 1926. Mar. 27. Year 40. Vol. 1. No. 13. pp. 172–178.

This paper consists of two parts. In the first is given a general description of yaws, noting in 500 cases the relative frequency of the different parts of the body as the site of the primary lesion. This was on the leg or foot in nearly 70 per cent. In the second part the authors give brief notes of ten patients treated by treparsol. Stovarsol and treparsol by mouth they found very efficacious, but the latter preferable as being more easily absorbed and more regularly eliminated. They gave the drug on three successive days, three tablets (comprimidos) daily ; this course was repeated three times with intervals of five days as a rule, and excellent results were obtained. [Unfortunately, the quantity in a dose is not stated.]

H. Harold Scott.

BANDYOPADHYAY (B. N.). **Congenital Yaws.**—*Indian Med. Gaz.* 1926. Mar. Vol. 61. No. 3. pp. 120–121.

At the Native Civil Hospital, Kisumu, Kenya Colony, a large number of cases of yaws came under observation, including a certain number of very young infants. The case now cited is published as one of congenital yaws, by which one gathers from the context Sub-Assistant Surgeon Bandyopadhyay means a case infected before birth. A baby two weeks old was brought up for treatment of yaws, and the following history is given : the mother was treated by the author for yaws six months previously ; the father is stated to have had syphilis six years before and to have been treated with N.A.B. Two children born to another wife were both healthy, the third of his children being the babe under consideration born of his second wife.

[No clinical account of the manifestations in the child and no dates in the family history are given. There appears to be no evidence from the published account that the case was one of congenital yaws.]

H. S. S.

DEVOTA (T J) **Two Uncommon Cases of Yaws.**—*Malayan Med Jl* Singapore 1926 May Vol 1. No 2 p 28.

Malay boys, aged 3–4 years (two cases), are recorded as suffering from retention of urine in consequence of cicatricial phimosis following yaws Hospital-assistant Devota states that these were the only cases of such a condition seen among 12,000 cases of yaws, 3,000 of whom were children under 12 years of age, treated in Kelantan In the first case a large collection of pultaceous phosphatic deposit was found in the preputial sac, in the second several hundred small phosphatic calculi

H S S

BITTNER (L H) **Some Observations on the Tertiary Lesions of Framboesia Tropica, or Yaws.**—*Amer Jl Trop Med* 1926 Mar Vol 6 No 2 pp 123–130 With 4 text figs [9 refs]

Account is given of two cases of rhinopharyngitis mutilans and four of keratoma plantare sulcatum met with in Java, and mention is made of juxta-articular nodules, the author joining with those who believe these conditions to be yaws manifestations

H S S

ZIEMANN (Hans) Beitrag zur Frage der "sogenannten Rhinopharyngitis mutilans" [**The So-called Rhinopharyngitis mutilans.**]—*Ibid* pp 161–182 With 18 text figs [73 refs]

Ziemann deals with 13 cases of gangosa observed in Kameroon, obviously a good many years ago, as he says it was before the introduction of salvarsan In none of these were there other bony changes in the skeleton comparable to those seen in syphilis In none of those in which it was possible to make microscopical and histological examinations were parasites found save in one in which some bodies were seen resembling blastomycetes In two cases in which the Wassermann reaction was performed the result was fully positive The author is inclined to believe that the condition is a late manifestation of yaws in spite of the negative findings and in spite of the fact that his cases gave no history of previous yaws Seven pages are devoted to an historical survey of the subject and quite an extensive bibliography is given.

H S S

PINEDA (Eloy V) & WADE (H W) **The Public Health Value of the Kahn Precipitation Test with Special Reference to Yaws.**—*Jl Philippine Islands Med Assoc* 1926 June Vol 6 No 6 pp 183–187 [5 refs]

After discussing the relative value of the Kahn and the Wassermann test the authors conclude that in the former they have a very valuable means of diagnosis of spironemal infections In 575 sera parallel tests gave an average agreement of 89 4 per cent In latent yaws they found the Kahn test more sensitive The tests were used in the diagnosis of syphilis and yaws among the leper population of Culion Colony where 4 per cent and 10 per cent respectively are affected with these two diseases The authors point out [as has been pointed out before in these columns] the necessity of carrying out a long series of observations on the results of treatment as given in anti-yaws campaigns expressed in terms of serum reactions, and they think the Kahn test the most suitable to be so employed.

H. S. S.

IKEGAMI (Y.). **An Experimental Study on Framboesia.**—*Japan Jl. Dermat. & Urol.* 1926. May, June. Vol. 26. No. 5, 6. English summary pp. 36–37. [In Japanese pp. 508–510.]

An experimental study on the lines of the researches made by BROWN and PEARCE in America. Inoculation of rabbits into scrotal skin, into testicle and anterior chamber of eye was practised. 80–90 per cent. of the skin and testicle cases were successfully infected with incubation period of a month, a higher infection rate and shorter incubation period being noted in winter than in summer. Among 16 infected by scrotal skin route, 4 gave positive W.R. but all negative Sachs-Georgi reaction. Among the intratesticular cases W.R. was positive in 64 per cent. and Sachs-Georgi in 42 per cent.

H. S. S.

SCHLOSSBERGER (H.) & PRIGGE (R.). Beobachtungen bei der Recurrensinfektion syphilis- und frambosiekranker Kaninchen. [**Infection with Relapsing Fever of Rabbits previously infected with Yaws and Syphilis.**]—*Med. Klin.* 1926. Aug. 6. Vol. 22. No. 32 (1130). pp. 1227–1229. With 1 text fig. [3 refs.]

In view of the recent developments in treatment of general paralysis by inoculated relapsing fever the authors conducted a series of experiments to determine the results of intravenous injection of the blood of mice infected with *Sp. recurrentis* into rabbits already infected with syphilis or yaws. Their conclusions are as follows. Inoculation of large quantities of blood as above succeeds in many cases in infecting the syphilitic or framboesial rabbit, but the *Sp. recurrentis* is only found in small numbers and for a very short period in the blood. At the same time the spirochaetes of syphilis or yaws are found for many weeks in their respective lesions. The spirochaete of relapsing fever appears to exert no antagonistic action upon those of syphilis or yaws. On the contrary, there appeared to be a marked persistence of the syphilitic or framboesial sore in these secondarily inoculated cases. In the treatment of syphilis in man and more especially of G.P.I. inoculation with relapsing fever must be regarded as a non-specific therapy. Attention is called to the possibility that the spirochaetes of relapsing fever settle in the meninges and cause them to be more permeable to the passage of chemical therapeutical agents.

H. S. S.

BOISSEAU (R.). Traitement du pian par l'acétylarsan : avantages de ce produit chez l'enfant. [**Treatment of Yaws by Acetylarsan : its Advantages in Children.**]—*Bull. Soc. Path. Exot.* 1926. June 9. Vol. 19. No. 6. pp. 416–419. [12 refs.]

The author calls attention to the advantages possessed by this drug —diethylamine oxyacetylaminophenylarsinate; it is made up in solution in water, contained in ampoules of two strengths suitable for adults and children respectively, it is colourless, keeps indefinitely, is rich in arsenic, but being easily eliminated may be given in big doses subcutaneously without pain at 48-hour interval (2 cgm per kilo of wt) The results are equal to those obtained by other preparations.

H. S. S.

FRANKLIN (J C) **Treatment of Yaws by Novarsenobillon.** [Memoranda]—*Brit Med Jl* 1926 June 5 p 943

Reports from Nigeria a case of yaws with large ganglia on the back of the hand, the ganglia as well as the eruption disappeared under treatment with N A B The author has also used this treatment with success in cases with contracted tendons and in a case with ganglia but with no yaws [It is not stated whether the last mentioned cases had a history of past yaws one may surmise that they had, but the author appears unaware of the framboesial affections of tendon-sheaths described by other writers]

H S S

SHIRCORE (J O) **Yaws and Syphilis in Tropical Africa : Mass Treatment with Bismuth-Arsenic Compounds.** [Correspondence]—*Lancet* 1926 July 3 pp 43–44

The use of a compound produced by the interaction of bismuth sodium tartrate ("Sobita," Howard & Sons) and soamin in the treatment of yaws and syphilis among natives of Tanganyika Territory is here reported Dr Shircore says that it had occurred to him that a mixture of these two drugs might produce a better therapeutic effect than the bismuth salt alone, but that he had not realized that a reaction might take place between these substances till after reading LEVADITI's work on bistovol" He found that on boiling together solutions of soamin and bis sod tart a precipitate is formed "An hypodermic injection administered to myself of the whole preparation produced by 3 gr each of bismuth and soamin in 2 ccm of water" was followed by no untoward result This experiment was followed by the use of this preparation for the treatment of natives suffering from yaws and syphilis and good results are reported Dr Shircore hopes that others "who have the welfare of the native at heart may give it a trial" [A word of warning would appear justified in this connexion even though the results obtained may appear to justify the means adopted The injection into the body of substances of unknown composition and without previous control experiments can hardly be considered a wise proceeding Sobita is specially prepared as neutral as possible and any admixture with another substance such as soamin would certainly result in decomposition As a matter of fact this interaction does result in the formation of a precipitate (due to combination or breakdown of both molecules) which contains both bismuth and arsenic but the composition is uncertain Research on this matter may yield interesting results]

H. S. S.

WINCKEL (Ch. W. F.). Die Bekämpfung der **Framboesia tropica.** **[The Campaign against Yaws.]**—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Vol. 30. No. 1. pp. 184–192.

Winckel deals in general terms with the anti-yaws campaign being carried out in Java, where in certain areas 90 per cent. of the population is affected.

He accepts pseudo-lepra, gangosa, juxta-articular nodules and goundou as manifestations of yaws and believes that many if not all the cases diagnosed and treated as syphilis at the same time were cases of yaws. Cases were treated by a single injection of ·45 gm. neosalvarsan [the author being ignorant of the good results obtained elsewhere with bismuth salts]. Except the immediate good results obtained in many, the true results were unknown since the patients were not again seen. [No clinical information and no statistics.]

H. S. S.

i. WINCKEL (Ch. W. F.). Bekämpfung der Framboësia tropica mit Salvarsan. **[Treatment of Yaws by Salvarsan.]**—*Dermat. Woch.* 1926. June 26. Vol. 82. No. 26. pp. 874–878. With 1 fig.

ii. DELBANCO (Ernst). Zum Aufsatz von WINCKEL: Bekämpfung der Framboësia tropica mit Salvarsan. Ein Ausblick auf die Bekämpfung der Syphilis.—*Ibid.* pp. 878–879.

i. Some general observations on the use of salvarsan in the anti-yaws campaign in the Dutch East Indies where, by the end of 1924, some 1,600,000 injections had been given. [The paper, however, contains nothing that has not already appeared in previous communications by this author, who maintains that salvarsan is the best drug for the purpose, leaving out the question of cost, in D.E.I. payment since made by the natives covered the cost of treatment.]

ii. Some general observations on the treatment of syphilis by salvarsan in view of the results obtained in yaws in the Dutch E. Indies.

H. S. S.

VAN HOOF (L.). A propos des nodosités juxta-articulaires. **[Juxta-Articular Nodules.]**—*Ann. Soc. Belge de Méd. Trop.* 1926. Apr. Vol. 6. No. 1. pp. 53–56. With 7 figs. on 4 plates. [2 refs.]

Replying to a demand made in the *Bruxelles Médical* for further observations on this subject by workers in the tropics, Van Hoof states definitely that he is led to believe that J.A.N. are of framboesial origin, to the exclusion of syphilis, filariasis and the mycoses. He finds that the swellings due to onchocerca tend to occur in the same sites as J.A.N., and while they cannot be differentiated on simple clinical examination, puncture of the cyst and examination of the sero-purulent contents always reveals embryos, thus establishing the diagnosis. The histological picture varies in the two cases also—J.A.N. do not show giant cells, Wolff's fibres or newly formed capillaries. Further attempts to cultivate any fungus from aspirated fluid have failed. On the other hand, in this fluid may often be demonstrated spirochaetes of the pallida-pertenue type. His observations were made in Mayombe—Congo Belge—where nearly the whole population shows some manifestation of yaws and where only a single, imported, case of syphilis was encountered. Some cases showing J.A.N. also presented joint troubles resembling secondary syphilitic synovitis affecting wrists and instep. These cleared up under treatment by N.A.B. and the nodes showed marked retrogression though the process is slow and seldom complete.

H. S. S.

Perdomo Hurtado (B.) & Ferrer Viera (Miguel). Nota preliminar sobre un caso de "Nudosidades juxta-articulares de Lutz y Jeanselme". **[Note on a Case of Juxta-articular Nodules.]**—*Rev. Med. y Cirug.* Caracas. 1926. May. Vol. 9. No. 98. pp. 75–79.

An account of a patient, 50 years of age, exhibiting a dozen or so small nodules in the neighbourhood of the elbows, wrists, knees and ankles. Some were subcutaneous and moveable, others appeared adherent to the periosteum. The remainder of the paper consists of extracts from the earlier description of juxta-articular nodules by Lutz and Jeanselme. This patient's serum gave a positive Wassermann reaction.

H. Harold Scott.

McNaughton (J. G.). **A Case of Goundou.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. Mar. 18 & May 20. Vol. 20. Nos. 1 & 2. p. 123.

A short note recording the case of a native female child aged 10 years observed in Dar-es-Salaam, Tanganyika Territory, suffering from goundou. The paranasal swellings were the size of sparrows' eggs, symmetrical and of bony hardness. There was a history of yaws 24 months before being seen which cleared up untreated; the swellings appeared six months later. The condition was associated with "sabre-shaped tibiae" and marked anaemia but no other signs referable to yaws or syphilis. Two injections at a week's interval of bis. sod tart. gr.3 and soamin gr 2 caused no change in the condition.

[This case should be compared with those cited by Botreau-Roussel in his monograph, this *Bulletin* Vol. 22, p. 421, and it would be interesting if all such cases (goundou) were put on record with a view to settling the etiology of the condition.]

H. S S

Hanschell (H. M.). **On the Influence of Race in Venereal Disease.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Nov. 19 & Dec 17. Vol. 19. Nos. 5 & 6. pp. 321–327.

Working with clinical material available at the V.D. Clinic, Seamen's Hospital, Royal Albert Dock, during six years the author has attempted to ascertain whether the three venereal diseases, ulcus molle, gonorrhoea and syphilis, manifested any differences according to the race of the patient.

1 *Ulcus molle*: 12 Chinese, 20 Negroes, 30 Indians, 55 North-Europeans. No clinical differences in members of the several races were observed, nor among the Europeans, whatever the race of the source of infection.

2. *Gonorrhoea*: 60 Chinese, 65 Negroes, 92 Indians, 600 North-Europeans. Among the non-Europeans in a great majority of cases the disease was more severe than among the Europeans, due only to neglect among the former. Except endocarditis and conjunctivitis of

gonorrhoeal origin which were not seen, every type of disease and every kind of complication was met with among all groups. Among the Europeans infected by non-European women the disease showed no difference from the disease contracted from Europeans.

3. *Syphilis:* 72 Chinese, 75 Negroes, 105 Indians, 700 North-Europeans. With primary and secondary syphilis which form the majority of cases in each group, no differences, except those that may be fairly classed as individual and not racial, were detected clinically or serologically. Similar variations occurred in each group. Microscopical examinations of spironemes from the several groups appeared to show no differences and the response to treatment was similar in all groups. Among the tertiary cases the numbers for the non-Europeans are too small to be of much value, but each group contained "cases of skin, bone, cardiac and vascular lesions, and hemiplegias." No case of syphilis of the central nervous system (parenchymatous neuro-syphilis) came under the author's observation at the clinic in the first instance; a few cases were passed on to him from other departments. They included among North-Europeans six cases of tabes and three of G.P.I.; one Chinaman and two Negroes with tabes; one Indian with G.P.I. The author says: "For what it is worth this experience suggests that syphilis of the central nervous system is definitely commoner in the three non-European groups than in the European." A point of special interest is that one European with G.P.I. and two with tabes had acquired their infection from a Chinese, an Indian and a Negro woman respectively. In his conclusions the author "suspects that reported differences in the several venereal diseases in different racial groups are founded mainly on locally conditioned circumstances affecting the investigation of these cases."

[It is interesting to compare these observations upon natives living what may be termed unnatural lives with the findings of other observers working among native communities in their own countries wherein it is an accepted fact that tabes and G.P.I. are very rare as compared with Europeans. There is a good deal of valuable evidence, too, that the various manifestations of syphilis do differ in their incidence among the several races and that such differences do depend upon racial, anatomical and physiological differences.]

H. S. S.

OLMER (D.). La syphilis hépatique tertiaire de l'adulte. (Diagnostic. Indications et résultats du traitement spécifique). [**Tertiary Syphilis of the Liver in the Adult.**]—*Rev. Prat. Malad. des Pays Chauds.* 1926. Feb. Year 4. Vol. 5. No. 10. pp. 446–60.

The author draws attention to the frequency with which lesions of the liver have a syphilitic origin and to their polymorphism. They may be latent, that is to say without symptoms, in the form of isolated gummata or as an interstitial hepatitis causing hypertrophy, or these signs may be accompanied with clinical manifestations. Among the latter, he describes five types: (1) hypertrophic hepatitis with chronic jaundice; (2) Hanot's disease; (3) hypertrophic cirrhosis with splenomegaly and ascites of Ménétrier; (4) hypertrophic cirrhosis with splenomegaly, but without ascites or jaundice of Léon Blum; (5) hypertrophic cirrhosis with pigmentation, Olmer and Gros. Short descriptions are given of the clinical signs and the serum reactions in these cases, the important point for the tropical practitioner being the fact that in some cases a persisting intermitting fever may be present, making a differential diagnosis from liver abscess very difficult. Treatment may give very satisfactory results, but in some cases which are undoubtedly syphilitic in origin specific treatment meets with no success. Great caution is essential in exhibiting these remedies, owing to the ease with which toxic symptoms may be induced. The author advocates potassium iodide in doses of ½ to 6 gm. *per diem* in gradually increasing doses, associated with intravenous injections of mercuric cyanide for 10 days, or intramuscular injections of bismuth. Organic arsenicals are considered too dangerous to use, except sulpharsenol in doses of 0·15 gm. once a week.

H. S. S.

MEHTA (Vallabhdas N.). **A Case of Syphilis of the Liver suggesting Liver Abscess.**—*Indian Med. Gaz.* 1926. May. Vol. 61. No. 5. p. 230.

Report of the case of a male aged 40 [nationality not stated] who, having suffered for three months from pain and tenderness over the liver, with fever, rigors and sweats and been treated by 12 injections, each of quinine and emetine, acknowledged a previous sore on the penis. Antisyphilitic treatment [nature of treatment not mentioned] resulted in disappearance of fever and pain by the fourth day, and convalescence in three weeks.

H. S. S.

RAYNAUD (M.), LACROIX (A.), BÉRAUD (M.) & BOUTIN (P.). Les modifications du liquide céphalo-rachidien au cours de la syphilis chez les Musulmans algériens. Premier mémoire. [**Changes in the C.S.F. in the Course of Syphilis in Algerian Musulmans.**]—*Bull. Soc. Française Dermat. et Syph.* 1926. Feb. No. 2. pp. 139–144.

Observations were made upon: (*a*) 38 primary-secondary cases; (*b*) 24 tertiary cases, and (*c*) 6 of neurosyphilis, recording the following points: cerebrospinal fluid pressure, albumin content, cellular count, Wassermann reaction and colloidal benzoin curve together with a note as to reaction following lumbar puncture. These may be summarized in the following table:—

	(A) Per cent.	(B) Per cent.	(C) Per cent.
Tension above normal	36	37	83
Albumin content raised ...	21	8·3	50
Leucocyte count abnormal	26	41·6	50
Wassermann reaction positive	0%	0%	33
Benzoin reaction	—	—	50

Further observations will be published later.

H. S. S.

HILL (O. A. R. Berkeley). **A Note on the Incidence of Neuro-Syphilis among Coloured Races.**—*Indian Med. Gaz.* 1926. Feb. Vol. 61. No. 2. pp. 57–62.

In 1922, at the request of Professor KRAEPELIN, a questionnaire on the subject, drawn up by Major Hill, was issued to all Army Divisional Headquarters and Medical Departments in each Province in India.

Copies were also sent to Egypt, South Africa, Nigeria, Gold Coast, Ceylon, Hong Kong, F. M. States, Japan, Madagascar, Belgian Congo and U.S.A. Summaries, in a few lines, of the replies received from 32 stations in India, form the body of this article, together with some notes from Ceylon, Nigeria, F. M. S., a table of deaths from G.P.I. and tabes in U.S.A. and some quotations from an article by WENDER on G.P.I. in Panama.

[No general summary is given, and from the nature of the material it is impossible, even in the case of India, to formulate any conclusions. The general impression given is that G.P.I., and still more perhaps tabes, is rare among native races, an opinion which has been held for many years. It is, however, always uncertain whether cases of any particular disease in native countries come under observation, and even if they do, whether they are recognized. WENDER states of the Panama coloured people, that the idea of immunity to G.P.I. has been disproved, and that the fallacy depended on lack of appreciation of the proper symptoms of that disease in coloured races. Practically all reporters only refer to G.P.I. and tabes, and ignore other manifestations of neurosyphilis.]

H. S. S.

MOTAIS (F.). Le tabès en Cochinchine. [**Tabes in Cochin-China.**]—*Bull. Soc. Path. Exot.* 1926. Feb. 10. Vol. 19. No. 2. pp. 81–86.

It has been hitherto believed that tabes is a very infrequent manifestation of syphilis in Cochin-China. MONTEL noted two cases in 23 years' practice and among 150,000 patients; general paralysis he had never seen. The author has an ophthalmological clinic, and his experience since 1923 leads him to believe that syphilitic eye symptoms are the same with few exceptions in Cochin-Chinese as in Europeans. Of 28 patients with optic atrophy, seen as out-patients, many had other symptoms of degenerative nervous syphilis. Some details are given; loss of knee-jerks, Argyll-Robertson pupil, lightning pains, ataxia were among the symptoms. The author asks why he has discovered these cases when others have failed, and replies that it is because the Annamites learned that at the ophthalmological clinic sight was restored to the blind. None of the tabetics complained of anything but blindness, and the natives in any case do not consult a European doctor for insidious and chronic complaints such as tabes. In France, the proportion of tabetics with optic atrophy lies between 15 and 30 per cent.; there are probably then many tabetics in Cochin-China.

The author remarks that ataxia is much less evident here than in Europe because the feet are bare; in keeping contact with the ground with the bare sole they can more easily correct the tendency to disordered movement.

A. G. B.

MULDER (Denis). Prophylaxis der Dementia Paralytica. [**Prophylaxis of General Paralysis.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1926. Vol. 66. No. 2. pp. 220–235. [5 refs.]

The author quotes the case of a Eurasian who acquired syphilis as a youngster. Though treated vigorously 25 years later the infection was not extinct. At this time the patient suffered from well-marked symptoms of G.P.I. He was inoculated with tertian malaria, which rendered him very ill but disappeared spontaneously after 14 attacks. By that time the psychical condition had returned to normal, though the cerebrospinal fluid still showed all the characteristics of syphilis and the blood contained numerous malarial parasites. Mulder thinks that the presence of spirochaetes is of minor importance in the causation of G.P.I. In natives of the Dutch East Indies this affection is very rare, owing, according to the author, to the fact that regular treatment is rarely administered in this people, and accordingly natural immunization is not interfered with. Immunization protects, sterilization weakens the natural powers of protection.

Mulder regards the introduction of chemical drugs as one of the menaces civilization has brought to the native. [See MULDER, *ante* p. 452].

W. J. Bais.

PLAUT (F.) & JAHNEL (F.) Die progressive Paralyse—eine Folge der Schutzpockenimpfung? [**Is G.P.I. a Sequel of Anti-Smallpox Vaccination?**]—*Muench. Med. Woch.* 1926. Mar. 5. Vol. 73. No. 10. pp. 396—400. [25 refs.]

The authors review some of the literature dealing with the thesis that G.P.I. is a result of vaccination with calf lymph, and those interested in this subject should consult the original paper and the bibliography given. Most of the evidence is uncertain and much of it more than inconclusive, but the speculation is interesting and may help to throw light on the difficult problem of the incidence of general paralysis.

H. S. S.

ADELMANN (Edgar G.). Beitrag zur Behandlung des Ulcus molle an Bord. [**Treatment of Soft Sore on Board Ship.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. July 1. Vol. 30. No. 7. pp. 297–298.

A short note to record the good healing effect, obtained in five cases, of the direct action of sunlight focussed through a burning-glass on the edges of the lesions, as experimentally observed on board ship along the South American coast. This procedure is suggested for further trial as a method of choice or as a supplementary measure.

W. Jenkins Oliver.

EWSTIFÉIEFF. Traitement du chancre mou et du bubon par les attouchements à l'acide phénique pur, chez les indigènes du Sénégal. [**Treatment of Soft Chancre and Inguinal Bubo among Natives of Senegal by Pure Carbolic Acid.**]—*Bull. Soc. Path. Exot.* 1926. Apr. 14. Vol. 19. No. 4. pp. 314–315.

Basing his opinion on three cases the author is of opinion that the treatment advocated is superior to any other. It consists in the application of pure carbolic acid to the chancroid and to any inguinal bubo which has ulcerated, followed by a dressing of iodoform powder.

H. S. S.

i CALLANAN (J C J) **Some Observations on Framboesia Tropica, made in a District of Kikuyu Province, Kenya Colony.**—*Kenya Med Jl.* 1926 June Vol 3 No 3 pp 62–88 With 4 plates

ii SURTI (S B) **The Treatment of Syphilis by Benzo-Bismuth.**—*Indian Med Gaz* 1926 May Vol 61 No 5 pp 214–215

iii GEORG (Carl Theodor) Kurze klinische Mitteilungen aus dem Hospital San Antonio (C Th Georg), San Pedro de Macoris (Santo Domingo) [**Clinical Notes from Santo Domingo.**]—*Arch f Schiffs- u Trop -Hyg* 1926 Jan 8 Vol 30 No 1 pp 30–32 With 2 text figs

i This paper, which was originally printed as a thesis and appeared in condensed form in the *Transactions of the Royal Society of Tropical Medicine and Hygiene*, has been already noticed in this *Bulletin, ante*, p 446

ii After giving this preparation what the author calls "a fair trial" [a single short course in each of four cases] he reports highly of its curative properties H S S

iii One case of syphilis or yaws and one of yaws, with photographs

A G B

CLIMATIC BUBO

HANSCHELL (H M) **Observations on Climatic Bubo** —*Lancet* 1926. Aug 7 pp 276–277

Some notes upon cases seen in Africa, in the West Indies and 26 cases at the Seamen s Hospital, London Reference is made to the occurrence in two cases 3–4 weeks after infecting coitus of shallow pin-head ulcers in the post-coronal sulcus, lesions which have been described by others No case was seen in a circumcised man One case contracted the disease in Marseilles, one denied coitus and another had never been out of England Fever was commonly noted No organism was found in aspirated juices nor in sections of excised glands The author found the morbid changes could not be constantly differentiated from the changes found in inflamed glands associated with ulcus molle or scabies The treatment adopted consisted in swabbing the glans, etc , with methylated spirit (90 per cent), a single such application sufficing to clear up the balanitis cleaning up, trimming of open lesions and applications of eusol aspiration of fluctuating glands, never incision T A B vaccine, 100 millions intravenously, was then given with invariable good result and rapid involution of the disease; only rarely was it necessary to give a second injection (in 4–5 days of 150–200 millions), and more rarely still a third

[The author informs the reviewer that the number was 26]

H S Stannus

LOW (George C) & COOKE (W E) **Climatic Bubo and its Treatment by "Protein Shock" and Aspiration.**—*Jl State Med* 1926 Aug Vol 34 No 8 pp 450–463

The authors after giving a short résumé of our knowledge of this affection record notes of four cases treated by the method advocated by HANSCHELL and referred to above—aspiration, eusol and T A B vaccine intravenously in doses of 50 or 100, 200 and 250 millions at six-day intervals, as required, with excellent results in each case

H S S

DE BELLARD (E P) **Subacute Inguinal Poradenitis, or Climatic Bubo.**—*Jl Trop Med & Hyg* 1926 Apr 1 Vol 29 No 7 pp 103–108 [27 refs]

Based on the study of 22 cases in Venezuela during four years, the author gives a very good account of the condition known as climatic bubo, for which, however, he proposes the term that appears at the head of this paper as " less cumbersome than others and as fairly well descriptive of the disease ' [It is less cumbersome than some that have been proposed, but until such time as the etiology of this disease be settled the rather non committal old name has much in its favour] The clinical account and descriptions of the pathological findings are clear and do not differ materially from those recently given by other authors Full reports of the cases, pathological and experimental work are given in the author s Monograph presented to the Fourth Venezuela Congress of Medicine Caracas, 1925 [*ante*, p 490]

Animal inoculation with gland emulsions in saline was partially successful, in two monkeys the clinical and pathological pictures of climatic bubo were reproduced, results resembling those obtained by VIRGILLO [this *Bulletin*, Vol 22, p 988] The author advises surgical extirpation, as in his experience all other forms of treatment " yield uncertain and unsatisfactory results ", [but he does not appear to have tried tartar emetic on the one hand nor on the other protein shock therapy]

H S S

HASHIMOTO (T) Ueber eine besondere Art von Bubonen (sogenannten klimatischen Bubonen) [**A Peculiar Kind of Bubo (so-called Climatic Bubo).**]—*Japan Jl Dermat & Urol* 1926 Mar Vol 26 No 3 German summary p 5 [In Japanese pp 179–196 12 refs]

Cases of climatic bubo were seen in Manchuria, generally among young adults In four cases the W R was positive and three had poor constitutions, but in none of these was there any history nor clinical manifestation of syphilis or tuberculosis Sections of glands after removal showed no evidence of either of these diseases Inoculation of animals with gland tissue and juice, cultural and smear preparations were negative except that in one case a streptococcus and in another *Staphylococcus aureus* was found

H S S

PARDO-CASTELLO (V) **Lymphogranulomatosis Inguinalis.**—*Arch Dermat & Syph* 1926 July Vol 14 No 1 pp 35–43 With 1 text fig. [18 refs]

After giving references to earlier writers, a useful list, some account of the clinical manifestations of the disease [climatic bubo] are given, the author describes three types of initial genital lesions The incubation period is stated as 1–(3)–6 weeks Mention is also made of the fact that the portal of entry of the virus may be the mouth and throat and the adenitis be in the cervical region, also that some generalized adenitis may be associated with the local enlargement of the groin General symptoms may be severe temperature over 105°, with mental stupor, delirium, dry tongue, anorexia and the picture of septicaemia with slight enlargement of liver and spleen *plus* albuminuria

No specific organism has been found and inoculation experiments are negative. The treatment used in the author's own three cases was surgical. He makes a suggestion which may not be known to all but may be of considerable value, namely, that solutions of tartar emetic should never be sterilized by heat but by filtration through a Chamberland bougie.

H. S. S.

HOME (W. E.). **Climatic Bubo.**—*Jl. Roy. Nav. Med. Serv.* 1926. July. Vol. 12. No. 3. pp. 210–212.

Some general recollections of cases seen in the Navy in the past with a table showing incidence per thousand men in 10-year periods from 1862 on the various naval stations.

H. S. S.

GRANULOMA VENEREUM.

GOLDZIEHER (M.) & PECK (S. M.). Das venerische Granulom. [**Granuloma venereum.**]— *Virchows Arch. f. Path. Anat. u. Physiol.* 1926. Mar. 3. Vol. 259. No. 3. pp. 795–814. With 9 text figs. [67 refs.]

After summarizing the work of other writers on this subject Professor Goldzieher and his colleague refer to their own seven cases—two women and five men, all coloured—observed in New York. The disease had existed from 3 months to 26 years in the several cases. In the first-mentioned the evolution of the condition after an incubation period of three weeks is described. Detailed descriptions of the histopathological conditions are then given, including the morphology of an organism which the authors believe to be the causative organism of the disease. This pleomorphic cocco-bacillus they were able to cultivate, most easily on Sabouraud's maltose agar medium, and the cultural characteristics are set down in full. Further, they were able to infect rabbits, in one case with the production of a granuloma. Lastly, positive results obtained by agglutination and complement deviation tests are claimed. This paper is too long to summarize more fully but will doubtless be read by all those interested in the problem of this disease.

H. S. Stannus.

GOLDZIEHER (Max) & PECK (Samuel M.). **Granuloma Inguinale: Clinical Observations, Vaccine Treatment and Allergic Reactions.**—*Arch. Dermat. & Syph.* 1926. July. Vol. 14. No. 1. pp. 14–27. With 7 text figs. [25 refs.]

After a short history of what is known of this affection and a useful list of references, the authors give their clinical observations on seven cases under care in New York City Hospital. Incubation period was believed to be about three weeks: the clinical picture is characteristic; there is a typical odour. A specific organism, a cocco-bacillus to be called *B. venereogranulomatis*, is found in large swollen mononuclear cells, themselves a characteristic feature in the histopathology. Analogous lesions were obtained in inoculated rabbits and positive results given in three out of four complement fixation tests. Allergic skin reactions were also noted. The treatment advocated is by means of tartar emetic and a vaccine of the specific organism.

H. S. S.

THIERFELDER (M. N.) & THIERFELDER-THILLOT (M.). Die Behandlung des venerischen Granuloms. [**Treatment of Granuloma venereum.**] —*Muench. Med. Woch.* 1926. Apr. 2. Vol. 73. No. 14. pp. 561–563. [1 ref.]

During a period of three years 5,000 cases were treated in New Guinea; Professor Thierfelder therefore speaks with some authority. Routine treatment consisted in the administration by intravenous injection of 10–12 cc. of a 1 per cent. solution of tartar emetic every second day, 20–25 injections in all constituting a full course. The dose should not exceed ·10 to ·12 gm.; with ·15 muscular cramps and collapse may ensue, whereas with the smaller doses some cough or vomiting only may sometimes be produced. Stronger solutions may cause thrombosis and possess no advantages over the 1 per cent. strength. Again injection every second day or thrice per week was found to be the most efficient form of treatment; daily injections cause cachexia, and if given at long intervals the effect of the drug is lost; too small doses over a very long period cause paralysis. For women and children smaller doses according to weight are recommended; children tolerate antimony better than adults. Other methods of administration are impossible—by mouth the drug causes vomiting, intramuscular or subcutaneous injection causes necrosis, and local application to the lesion sets up intense pain. In early cases 10 injections may be followed by healing but relapse may occur. Cure usually results in such cases after 20 treatments. In rather later stages with larger areas involved some 11 per cent. relapse even after 20 injections, while in later cases still this number of injections is seldom sufficient to effect healing, and in these relapse is certainly to be expected. Second, third, and sometimes fourth courses have been given with two weeks' interval between the courses, but in many a second course is ill supported and third and fourth courses are followed by asthenia and cachexia, the antimony salt appearing to lose effect on the lesion as a result of the inability of the body to react to the drug. Under these conditions it is obvious that some alternative treatment is necessary, and the author tried out a number of other preparations with this object in view. Neosalvarsan and Bayer 205 were found to be useless. Stibenyl Heyden while of little value comparatively alone, was found useful to replace the second course of tartar emetic. Other preparations essayed were Heyden 661, Heyden 471, and Bayer Sb. 211. These appear to be well supported and some results are promising, but it is too early to speak more definitely of their use in the treatment of this condition.

H. S. S.

PURCELL (H. M.). **Granuloma Inguinale.**—*Southwestern Med.* 1926. July. Vol. 10. No. 7. pp. 309–310. [2 refs.]

Records a case in a negro of Arizona in whom the intravenous injection of tartar emetic (·04 to ·1 gm. daily) yielded poor results as compared with the immediate effects obtained by local applications to the lesion of ½ per cent. solution of the same salt on gauze.

H. S. S.

REVIEWS AND NOTICES.

Moodie (Roy L.). [Ph.D., Associate Professor of Anatomy in th University of Illinois.] **Paleopathology. An Introduction to th Study of Ancient Evidences of Disease.**—567 pp. With frontis piece, 49 figs. & 117 plates. 1923. University of Illinois Press Urbana, Illinois.

This bulky tome forms practically an illustrated catalogue of all thos specimens of fossil animals and ancient man which present evidence o injury or pathological changes, with some references to plant pathology Such evidence is in the nature of things restricted, and it is obvious that whil positive evidence may not yield much, little of value can be argued from th negative side. While there is evidence of bacterial and fungus activit among plants since the Devonian, bacterial infections among member of the animal kingdom are unknown before the late Paleozoic period.

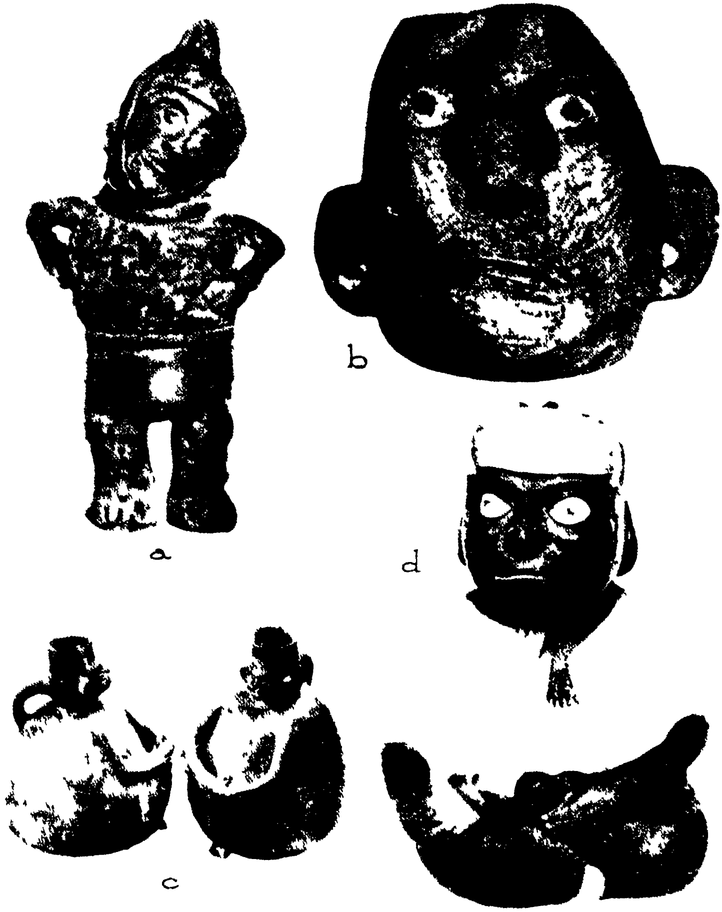
The first half of the book is devoted to general remarks, fractures an deforming arthritides, the latter common among Pleistocene mammals A reptile from the Permian of Texas—Dimetrodon—shows a fracture o the radius, while a Dinosaur which probably weighed close on 40 ton exhibits a haemangioma of the caudal vertebrae. Spondylitis deforman is stated to have existed during the past 100 million years. We ought no to grumble to-day at a little muscular rheumatism. Caries was apparentl rare in prehistoric animals, but there is some evidence of its occurrenc and a three-toed horse of perhaps a million and a half years ago suffere from something very much resembling actinomycosis Again, it is interesting to think that bacteria have been demonstrated in coprolites What a noble ancestry has the *B. coli!*

Several species of tsetse fly occurred during the Oligocene, and it i interesting to speculate whether they may have harboured the precurso of *T. brucei* and thus caused a decimating plague among the ungulat population of a million years ago or more.

Coming to MAN himself, reference is made to the exostosis on the lef femur of Pithecanthropus, to the signs of a fracture in the ulna of Neanderthal man, to the possibly pathological thickening of the Piltdown skull. Lastly, two chapters deal with the material from ancient Egyp made known to us by Fouquet, Ruffer and Elliot Smith, and from Peru. Spondylitis deformans was common 3,000 years B.C., Pott's diseas was found in a mummy of 1100 B.C., bilharziasis 1200 B.C., caries and pyorrhoea were not uncommon, and Shattock demonstrated the presence of calcification of the aorta in the Pharaoh of the Hebrew exodus. Among the Precolumbian inhabitants of Peru osteitis was known and has been considered to be possibly of syphilitic origin. It seems just as likely tha it was of framboesial origin in view of the fact that a skull of the same period shows the characteristic lesions of goundou.

Some of the well-known ancient Peruvian modelled water jars also bear witness to affections of tropical interest: one depicts the head of a man with goundou, another an achondroplasic dwarf with verruga peruviana a third, South American leishmaniasis, and a fourth "Jiggers" of the soles of the feet.

H. S. Stannus.



a Small water jar representation of an achondroplastic dwarf on whose body are seen the nodular eruptions of verruga After ASHMEAD

b Evidence of goundou in ancient Peru

c These ancient Peruvian water jars show the seated figures examining the soles of their feet in which there are holes left after taking out the egg sacs of the sand flea nigua Original in American Museum of Natural History

d An example of ancient Peruvian pottery showing an amputated leg at the tibio tarsal junction with a cap of painted bone or wood or metal in the right hand of the figure to adjust to the stump of the leg Collected at Chimbote Peru, by Bandelier Original in American Museum of Natural History

[Reproduced from Paleopathology (Dr Roy I MOODIE)]

ERRATA

Vol 23 No 3 p 201 FOLEY & MESLIN summary 3rd line of title, for “ Scientific Exploration of the *cases* of Gourara and Touat ” read “ *Oases* ”

Vol 23 No 10 p 737, top line NOGUCHI’s summary (Rocky Mountain Fever), for *Dermacentor rickettsia* read *Dermacentroxenus rickettsi*

Vol 23 No 11 p 854 Review of GRIXONI (Geographical Medicine and Hygiene in Italian Colonial Possessions) last line of first para , for “ anthropods ” read “ arthropods ”

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The bracketed abbreviations after the page numbers indicate the subject. Page numbers within brackets indicate papers not summarized

Am	signifies	Amoebiasis and Amoebic Dysentery
Bb		Beriberi.
Bl		Blackwater
B R.		Book Review.
Chl.		Cholera
C Bu		Climatic Bubo
Der		Tropical Dermatology.
Diet		Native Dietaries
Dys		Dysentery (Bacillary and Unclassed)
Ent.		Enteric Fevers
Fev		Fevers
G V.		Granuloma Venereum
Hel		Helminthiasis
H S		Heat Stroke
Jaun.		Infectious Jaundice
K A.		Kala Azar
Lab		Laboratory Reports
Lep	signifies	Leprosy.
Mal	,,	Malaria
Misc	,,	Miscellaneous
Myc	,,	Tropical Mycology
Oph	,,	Tropical Ophthalmology.
Pel	,,	Pellagra
Pl	,,	Plague
Rab	,,	Rabies
R F	,	Relapsing Fever and Other Spirochaetoses
Sc	,,	Scurvy
Sp	,,	Sprue
S S	,,	Sleeping Sickness
Tb	,	Tuberculosis
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 Festschrift des Hamburgischen Institut fur Schiffs- u Tropenkrankht 1925 80
 Genus Amblyomma The Part IV, commencing Vol II Ticks A Monograph of the Ixodoidea (Nuttall Warburton & Robinson), 413 14
 Geografia medica ed igiene dei nostri possedimenti coloniali (Grixoni), 854
 Handbuch der Tropenkrankheiten (Mense) 3rd Ed, Vol 4, 497
 Histological Technique for Normal Tissues Morbid Changes and the Identification of Parasites (Carleton & Haynes), 565–6
 Insects and Disease of Man (Fox), 412–13
 Japanese Journal of Medical Sciences, Vol 2, Nos 1–3, 80
 Journal of the Port-of-Spain Medical Society for 1924, 637
 League of Nations Health Organisation Malaria Commission Report on Tour of Investigation in Europe, 411
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 Paleopathology An Introduction to the Study of Ancient Evidences of Disease (Moodie), 942
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BUREAU OF HYGIENE AND TROPICAL DISEASES.

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Annals of Tropical Medicine & Parasitology (Liverpool)	1907—	Vol.	1—	
Archives of Disease in Childhood (London)	1926—	Vol.	1—	
British Dental Journal (London)	1926—	Vol	47.—	
British Journal of Dermatology & Syphilis (London)	1925—	Vol.	37—	No. 7—
British Journal of Experimental Pathology (London)	1920—	Vol.	1—	
British Journal of Inebriety (Alcoholism & Drug Addiction) (London)	1926—	Vol.	23—	No. 3—
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British Journal of Tuberculosis (London)	1925—	Vol.	19—	No. 3—
British Medical Journal (London)	1876—			
Bulletin of Entomological Research (London)	1910—	Vol	1—	
Bulletin of the International Institute of Sanitary & Municipal Engineers (London)	1925—			No. 1—
Cancer Review (Bristol)	1926—	Vol	1—	
Domestic Engineering, Heat & Ventilation (London)	1926—	Vol	46	No. 2—
Edinburgh Medical Journal (Edinburgh)	1908—	(New Ser)		Vol 1—
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Journal of Comparative Pathology & Therapeutics (Edinburgh & London)	1908—	Vol	21—	
Journal of Good Lighting (London)	1926—	Vol	19—	
Journal of Helminthology (London)	1923—	Vol.	1—	
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Journal of the Institution of Sanitary Engineers (London)	1925—	Vol	29—	Pt. 4—
Journal of Mental Science (London)	1926—	Vol	72—	
Journal of the Ministry of Agriculture (London)	1913—	Vol	20—	
Journal of the National Institute of Industrial Psychology (London)	1925—	Vol	2	No. 5—
Journal of Pathology & Bacteriology (Cambridge and Edinburgh)	1892—	Vol.	1—	
Journal of the Royal Army Medical Corps (London)	1903—	Vol.	1—	
Journal of the Royal Naval Medical Service (London)	1915—	Vol.	1—	
Journal of Obstetrics and Gynaecology of the British Empire (Manchester)	1927—	Vol.	34—	
Journal of the Royal Sanitary Institute (London)	1922—	Vol.	42—	
Journal of School Hygiene and Physical Education (Birmingham)	1925—	Vol.	15	No. 52—
Journal of State Medicine (London)	1913—	Vol	21—	
Journal of the Town Planning Institute (London)	1925—	Vol.	12—	
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Lister Institute. Collected Papers (London)	1904—	Vol.	1—	
London School of Tropical Medicine. Collected Papers—				
(a) *Clinical & Pathological Papers*	1922—	Part	1—	
(b) *Papers from the Department of Helminthology*	1922—	Part	1—	
Medical Officer (London)	1925—	Vol.	34	
Nature (London)	1926—	Vol.	118—	No. 2970—
Parasitology (Cambridge)	1908—	Vol.	1—	

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[Physiological Abstracts (London)	1922-23 1926-27	Vol. Vol.	7— 11.]	
Post Graduate Medical Journal (*London*)	1925—	Vol.	1—	
Prescriber (Edinburgh)	1926—	Vol.	20—	
Proceedings of the Royal Society, Series B. (London)	1905—	Vol.	76—	
Protozoology. Supplement to the Journal of Helminthology (*London*)	1925—			No. 1—
Proceedings of the Royal Society of Medicine (London)	1921—	Vol.	15—	
Public Health (London)	1908—	Vol.	22—	
Review of Applied Entomology. Series A.: Agricultural. Series B. Medical & Veterinary (*London*)	1913—	Vol.	1—	
Review of Applied Mycology (*Kew*)	1922—	Vol.	1—	
Surveyor & Municipal & County Engineer (London)	1922—	Vol.	62—	
Transactions of the Royal Society of Tropical Medicine & Hygiene (*London*)	1907—	Vol.	1—	
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United Empire (London)	1926—	Vol.	17—	
Veterinary Journal (London)	1909—	Vol.	65—	
[Veterinary News (London)	1910-21	Vol.	7-18]	
Veterinary Record (London)	1912—	Vol.	25—	

IRELAND.

[Department of Agriculture & Technical Instruction for Ireland Journal (Dublin)	1901-23	Vol.	2-23]	
Irish Journal of Medical Science (Dublin)	1926—	6 ser.		No. 1—

AUSTRIA

Mitteilungen des Volksgesundheitsamtes im Staatsamt fur soziale Verwaltung (*Vienna*)	1920—	No	1—	
Seuchenbekämpfung (*Vienna*)	1924—	Vol	1—	
Wiener Klinische Wochenschrift (Vienna)	1913—	Vol.	26—	
Wiener Medizinische Wochenschrift (Vienna)	1927—	Vol	77—	

BELGIUM.

[Annales de Médecine Vétérinaire (Ixelles-Brussels)	1913-19	Vol.	62-64]	
Annales de la Société Belge de Médecine Tropicale (*Brussels*)	1920—	Vol.	1—	
Archives Médicales Belges (Brussels)	1917—	Vol.	70—	
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[Bulletin de l'Académie Royale de Médecine de Belgique (Brussels)	1908-19	(4 ser.)		Vol. 22-29]
Bulletin Agricole du Congo Belge (Brussels)	1915—	Vol	6—	
Bulletin International de la Protection de l'Enfance (Brussels)	1923—	No.	18—	
[Etudes de Biologie Agricole (London)	1915-16	Nos.	1, 2, 4]	

DENMARK

Hospitalstidende (Copenhagen)	1921—	Vol.	64—	

FRANCE

Annales d'Hygiène Publique, Industrielle et Sociale (Paris)	1923—	(New Ser)		Vol. 1—
Annales de l'Institut Pasteur (Paris)	1897—	Vol.	11—	
Annales de Médecine et de Pharmacie Coloniales [formerly *Annales d'Hygiène et de Médecine Coloniales* (*Paris*)]	1898—	Vol.	1—	
Annales de Parasitologie Humaine et Comparée (*Paris*)	1923—	Vol.	1—	
Archives de Médecine et de Pharmacie Militaire (Paris)	1914—	Vol.	63—	
Archives de Médecine et Pharmacie Navales (Paris)	1907—	Vol.	88—	
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Bulletin de l'Institut Pasteur (*Paris*)	1903—	Vol.	1—	
Bulletin de l'Office International d'Hygiène Publique (*Paris*)	1909—	Vol.	1—	

FRANCE—*cont.*

Bulletin de la Société de Pathologie Exotique (*Paris*)	1908—	Vol. 1—
Bulletins et Mémoires de la Société Médicale des Hopitaux de Paris (Paris)	1913—	(3 ser.) Vol. 29—
[Caducée (Paris)	1913–19	Vol. 13–19]
Comptes Rendus de la Société de Biologie (Paris)	1903—	Vol. 55—
Gazette des Hopitaux Civils et Militaires (Paris)	1913—	[Vol. 86 incomplete]
Journal de Médecine de Bordeaux et de la Région du Sud-Ouest (Bordeaux)	1923—	Vol. 95—
Medical Bulletin (*Paris*), see *War Medecine.*		
Presse Médicale (Paris)	1915— 1917—	Vol. 23 Vol. 25—
Recueil de Médecine Vétérinaire (Alfort) (1909 Vol 86)	1913—	Vol. 90—
Revue d'Hygiène et de Médecine Préventive (Paris)	1925—	Vol. 47—
Revue de Médecine et d' Hygiene Tropicales (*Paris*)	1904—	Vol. 1—
Revue de Pathologie Comparée et d'Hygiène Générale (Paris)	1917—	Vol 17—
Revue du Trachome (*Paris*)	1924—	Vol. 1—
Revue Générale de Médecine Vétérinaire (Alfort)	1913—	Vol. 21—
Revue Pratique des Maladies des Pays Chauds (*Paris*)	1922—	Vol 1—
Revue Vétérinaire (Toulouse)	1913—	Vol. 38—
[*War Medecine* (Paris) formerly *Medical Bulletin*	1917–18	Vol 1–2]
World's Health (Paris)	1926-	Vol 7, No 4—

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Arbeiten aus dem Reichsgesundheitsamte (Berlin).	1913—	Vol 43 -
Archiv fur Dermatologie und Syphilis (Berlin)	1926—	Vol 152—
Archiv für experimentelle Pathologie und Pharmakologie (Leipzig)	1926—	Vol 118--
Archiv fur Hygiene (Munich & Berlin)	1927—	Vol 98—
[Archiv für Protistenkunde (Jena)	1902–6	Vols. 1–7
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Archiv fur Schiffs- und Tropen-Hygiene [*& Beihefte*] (*Leipzig*)	1897—	Vol 1—
Archiv fur soziale Hygiene und Demographie (Leipzig)	1927—	
Archiv fur Wissenschaftliche und Praktische Tierheilkunde (Berlin)	1912—	Vol 39—
Berliner Tierärztliche Wochenschrift	1914—	Vol 30—
Biochemische Zeitschrift (Berlin)	1926--	Vol 179 [Incomplete]
Centralblatt für Bakteriologie (Jena) 1 Abteilung Originale	1912—	Vol 65—
Deutsche Medizinische Wochenschrift (Berlin)	1909—	Vol 35—
Deutsche Tierärztliche Wochenschrift (Hanover)	1924—	Vol 32—
Gesundheits- Ingenieur (Munich)	1927—	Vol. 50—
Klinische Wochenschrift (Berlin)	1924—	Vol. 3—
[Lepra (Leipzig)	1913–17	Vol. 14–15]
Medizinische Klinik (Berlin)	1924--	Vol. 20—
Mitteilungen d Tierseuchenstelle d Thüringischen Landesanstalt f. Viehversicherung	1922—	Vol. 2—
Münchener Medizinische Wochenschrift (Munich)	1914—	Vol. 61—
Reichsgeskundheitsblatt (*Berlin*)	1926—	Vol. 1—
Strahlentherapie (Berlin)	1926—	Vol. 24—
Zeitschrift fur Fleisch- und Milch-hygiene (Berlin)	1926—	Vol. 37—
Zentralblatt für die gesamte Hygiene und ihre Grenzgebiete (Berlin)	1926—	Vol. 13—
Zentralblatt für Gewerbehygiene und Unfallverhutung (neue folge) (Leipzig & Berlin)	1927—	Vol. 4—
Zeitschrift für Hygiene und Infektionskrankheiten (Leipzig)	1912—	Vol. 72—
Zeitschrift für Infektionskrankheiten parasitäre Krankheiten und Hygiene der Haustiere (Berlin)	1917–20	Vol. 18–20
	1922—	Vol. 24—
Zeitschrift für Immunitätsforschung und Experimentelle Therapie (Jena) Originale	1908—	Vol. 1—
Zeitschrift für Tuberculose (Leipzig)	1927—	Vol. 47—

GREECE.

Grèce Médicale & Ἰατρικὴ Πρόοδος (Athens)	1912—	Vol.	14— [Incomplete

HOLLAND.

Acta Leidensia (*Leyden*)	1926—	Vol.	1—
Janus (Leyden)	1909—	Vol.	14—
Mededeelingen van het Kolonial Institut, Afdeeling Tropische Hygiene (Amsterdam)	1914—		
Nederlandsch Tijdschrift voor Geneeskunde (Amsterdam)	1924—	Vol.	68—
Tijdschrift voor Diergeneeskunde ('s'Gravenhage)	1920—	Vol.	47—
[Tijdschrift voor Vergelijkende Geneeskunde, enz. (Leyden)	1922–25	Vols.	7–11]

ITALY

Annali d'Igiene [formerly Annali d'Igene Sperimentale] (Rome)	1912—	Vol.	22—
Annali di Medicina Navale e Coloniale (Rome)	1908—	Anno	14—
Archivo di Farmacologia Sperimentale e Scienze affini. (Rome)	1918—	Vol.	26—
[Annali della Stazione Sperimentale per le Malattie Infettive del Bestiame (Naples)	1911–13	Vol.	1–2]
Biochimica e Terapia Sperimentali (Milan)	1926—	Vol.	13—
Bollettino dell' Instituto Sieroterapico Milanese (Milan)	1917—	Vol.	1—
Bollettino della Societa Medico Chirurgica di Modena (Modena)	1914—	Vol	16— [Incomplete
Clinica Veterinaria (Milan)	1913—	Vol	36—
Giornale di Clinica Medica (*Parma*)	1920—	Vol	1—
[Giornale di Medicina Militaire (Rome)	1914–22	Vols.	62–70]
Giornale della R Accademia di Medicina di Torino (Turin)	1912—	Vol.	75—
[Giornale della Reale Società Italiana d'Igiene (Milan)	1913–19	Vol.	35–41] [Incomplete]
Haematologica (Naples)	1922—	Vol.	3—
International Review of the Science & Practice of Agriculture (Rome)	1920—	Vol.	11—
[Malaria e Malattie dei Paesi Caldi (Rome)	1910–17	Vols	1–8 [Vols. 1–3 incomplete]
[Malariologia [formerly Propaganda Anti-malarica] (Naples)	1911–12	Vol	4–14]
Maternita ed Infanzia (*Rome*)	1926—	Vol.	1—
Moderno Zooiatro (Bologna)			
Parte professionale	1913—	Vol.	
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Nipiologia (Naples)	1919—	Vol	5—
Nuovo Ercolani (Milan)	1913—	Vol	18—
Nuovo Veterinaria (Faenza)	1923—	Vol.	1—
Pathologica (*Genoa*)	1908—	Vol.	1—
Pediatria (Naples)	1913—	Vol.	21— (Ser. 2. Vol. 77—)
Policlinico (Rome) Sez medica	1912—	Vol.	19—
Sez pratica	1912—	Vol.	19—
Problemi della Nutrizione (*Rome*)	1924—	Vol.	1—
Riforma Medica (Naples)	1924—	Vol.	40—
Revista Critica di Clinica Medica (Florence)	1913—	Vol.	14—
Rivista di Malariologia (Rome)	1926—	Vol.	5—
[Rivista Pellagrologica Italiana (Florence)	1913–23	Vol.	13–23 [Incomplete]
Sperimentale (Florence)	1913—	Vol.	67—
Terapia (Milan) Parte pratica	1924—	Vol.	14—

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Norsk Magazin for Laegevidenskaben (Christiania)	1921—	Vol.	82—

POLAND.

Medycyna Doswiadczalna i spoleczna [formerly *Przeglad Epidemjologiczny*] (*Warsaw*)	1920—	Vol.	1—

[illegible]				
[illegible] e Patologia Exoticas (Lisbon) [illegible], &c.]	1905–19	Vols.	1–6]	
Archivos do Instituto Bacteriologico Camara-Pestana (Lisbon)	1906—	Vol.	1—	
[*Bulletin de la Société Portugaise des Sciences Naturelles (Lisbon)*	1907–20	Vols.	1–8]	
[Medicina Contemporanea (Lisbon)	1913–21	Vol.	31–39]	
ROUMANIA.				
Archivia Veterinara (Bucarest)	1920—	Vol.	14—	
Bulletin et Mémoires de la Société Médicale des Hopitaux de Bucarest	1919—	Vol.	1—	
RUSSIA.				
Arbeiten aus den Microbiologischen Institut des Volksunterrichtskomissariats (Moscow)	1925—	Vol.	1—	
Archives Russes de Protistologie (Moscow)	1924—	Vol.	3—	
Archives des Sciences Biologiques (Leningrad)	1923—	Vol.	23—	
Journal Médical de l'Asie Centrale (Taschkent)	1926—	Vol.	5—	
Revue de Microbiologie et d'Epidemiologie (Saratov)	1922—	Vol.	1—	
Russian Journal of Tropical Medicine (Moscow)	1923—	No.	1—	
SPAIN.				
Archivos del Instituto Nacional de Higiene de Alfonso XIII (Madrid)	1922—	Vol.	1—	
[Boletin del Instituto Nacional de Higiene Alfonso XIII (Madrid)	1913–19	Vol.	9–15]	
Revista Espanola de Medicina y Cirugia (Barcelona)	1918—	Vol.	1—	No. 1
Revista de Higiene y Sanidad Pecuarias (Madrid)	1917—	Vol.	7—	
Revista Medica de Barcelona (Barcelona)	1924—	Vol.	1—	
Siglo Médico (Madrid)	1924—	Vol	74—	
SWEDEN.				
Acta Medica Scandinavica (Stockholm)	1920—	Vol.	54—	
Acta Radiologica (Stockholm)	1927—			
Hygiea (Stockholm)	1920—	Vol.	82—	
Skandinavisk Veterinär-Tijdskrift (Uppsala & Stockholm)	1911—	Vol.	1—	
SWITZERLAND				
Bibliography of Industrial Hygiene (Geneva)	1925—			No. 10—
International Labour Review (Geneva)	1925—	Vol.	12—	
Matériaux pour l'Étude des Calamités (Geneva)	1924—	Vol.	1—	
Monthly Epidemiological Report of the Health Section of the Secretariat, League of Nations (Geneva)	1924—	No.	64—	
Schweizer Archiv für Tierheilkunde (Zurich)	1913—	Vol.	55—	
Schweizer Medizinische Wochenschrift (Basel)	1927—			

AMERICA.

CANADA.				
Canadian Engineer (Toronto)	1925—	Vol.	49—	
Canadian Medical Association Journal (Toronto)	1911—	Vol.	1—	
Public Health Journal (Toronto)	1926—	Vol.	17—	
CENTRAL AMERICA AND WEST INDIES.				
Boletin de la Associacion Médica de Puerto Rico (San Juan)	1914—	Vol.	10—	
Jamaica Public Health Bulletin	1917—			
[Monthly Reports of the Department of Health of the Panama Canal (Washington)	1907–1919]			
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ARGENTINE REPUBLIC.				
[Anales del Departmento Nacional de Higiene (Buenos Aires)	1919-22	Vol.	25–28]	
Anales del Instituto Modelo de Clinica Médica (Buenos Aires)	1917—	Vol.	2—	

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Boletin del Instituto de Clinica Quirúrgica (Buenos Aires)	1925—	Vol.	1—	
[Revista del Instituto Bacteriologico (Buenos Aires)	1918–19	Vols.	1–2 [Incomplete]	
Revista de Medicina Veterinaria (Buenos Aires)	1925—	Vol.	8—	
Revista Zootecnica (Buenos Aires)	1920—	Vol.	7—	No. 84—
Semana Medica (Buenos Aires)	1925—	Vol.	32—	

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Annaes Paulistas de Medicina e Cirurgia (São Paulo)	1915—	Vol.	4—	No. 3—
Archivos Brasileiros de Medicina (Rio de Janeiro)	1911—	Vol.	1—	
[Archivos da Escola Superior de Agricultura e Medicina Veterinaria (Pinheiro, E. do Rio)	1917–18	Vol.	1–2]	
Boletim do Instituto Brasileiro de Sciencias (Rio de Janeiro)	1925—	Vol.	1—	
Boletim da Sociedade Brasileira de Medicina Veterinaria (Rio de Janeiro)	1925—	Vol.	2—	
Boletim de la Sociedade de Medicina e Cirurgia de S. Paulo (Brazil)	1919—	Vol.	2—(ser. 2)	No. 2—
Brazil Medico (Rio de Janeiro)	1909—	Vol.	23—	
Memorias do Instituto de Butantan (S. Paulo)	1918—	Vol.	1—	
Memorias do Instituto Oswaldo Cruz (Rio de Janeiro-Manguinhos)	1909—	Vol	1—	
Revista Medico-Cirurgica do Brazil (Rio de Janeiro)	1921—	Vol.	29—	
Revista de Veterinaria e Zootechnia (Rio de Janeiro)	1917—	Vol.	7—	
Sciencia Medica. Revista Brasileira de Medicina e Sciencias Affins (Rio de Janeiro)	1923—	Vol.	1—	
Servico Sanitario do Estado de São Paulo Trabalhos publicados	1918—	N.S No	1—	

BRITISH GUIANA.

British Guiana Medical Annual	1890–92, 1894–1902, 1906—

COLOMBIA.

Repertorio de Medicina y Cirugia (Bogota)	1914—	Vol.	6—
Revista Clinica (Medellin)	1916—	Vol.	1—

PERU.

Anales de la Facultad de Medicina (Lima)	1918—	Vol.	1—
Cronica Medica (Lima)	1913—	Vol.	30—

VENEZUELA.

[*Anales de la Direccion de la Sanidad Nacional (Caracas)*	1919–23	Vols.	1–4]
Gaceta Medica de Caracas (Caracas)	1914—	Vol.	21—
[Gaceta Medica de Ciudad-Bolivar (Ciudad-Bolivar)	1920–21	No.	67–80]

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American Journal of Diseases of Children (Chicago)	1926—	Vol.	31—	
American Journal of Hygiene (Baltimore)	1921—	Vol.	1—	
American Journal of Pathology (Boston) [*formerly* Journal of Medical Research]	1925—	Vol.	1—	
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American Journal of Syphilis (St. Louis)	1925—	Vol.	9—	No. 4—
American Journal of Tropical Medicine (Baltimore)	1921—	Vol.	1—	
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Annals of Medical History (New York)	1927—	Vol.	11—	
Archives of Dermatology & Syphilology [*formerly* Journal of Cutaneous Disease including Syphilis] (New York)	1913—	Vol.	31—	
Archives of Internal Medicine (Chicago)	1908—	Vol.	1—	
Boston Medical & Surgical Journal (Boston)	1915—	Vol.	172—	
Bureau of Animal Industry Bulletins (Washington)	1909—	[Incomplete]		
California and Western Medicine (San Francisco)	1926—	Vol.	25—	No. 2—

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Cornell Veterinarian (Ithaca N Y)	1917—	Vol	7—	
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[Journal of the American Veterinary Medical Association	1917-23	Vols	51-62]	
Journal of the American Water Works Association (Baltimore)	1925—	Vol	14—	
Journal of Economic Entomology (*Concord*)	1908	Vol	1—	
Journal of Experimental Medicine (*New York*)	1896—	Vol	1—	
Journal of Immunology (Baltimore)	1925—	Vol	10—	
Journal of Industrial Hygiene & Abstract of Literature (Boston)	1922—	Vol	3—	
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Journal of Medical Research (Boston) [now *American Journal of Pathology*	1919-24	Vols	41-44	
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Monographs of the Rockefeller Institute for Medical Research (New York)	1920—	No	13—	
New Orleans Medical & Surgical Journal (New Orleans)	1912—	Vol	65—	
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Proceedings of the New Jersey Mosquito Extermination Association	1914—			
Proceedings of the Society for Experimental Biology and Medicine (*New York*)	1903—	Vol	1—	
Proceedings of the United States National Museum (Washington)	1879—	Vol	2—	[Incomplete]
Public Health Engineering Abstracts (Washington)	1924—			
Public Health Bulletins (Washington)	1908—	[Incomplete]		
Public Health Reports (Washington)	1909—	Vol	24—	
School of Hygiene & Public Health Johns Hopkins University Collected Papers (*Baltimore*)	1920—	Vol	1—	
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Southern Medical Journal (Birmingham Alabama)	(1911, 1912 incomplete) 1913—	Vol	6—	
Southwestern Medicine (*El Paso Texas*)	1917—	Vol	1—	
Studies from the Rockefeller Institute for Medical Research Reprints (New York)	1913—	Vol	17—	
[Texas State Journal of Medicine (Fort Worth)	1905-22	Vols	1-18]	[Incomplete]
United States Naval Medical Bulletin (Washington)	1909—	Vol	3—	
United States Veterans Bureau Medical Bulletin (New York)	1926—	Vol	2—	No 9—
United States War Department Bulletin (*Washington*)	1913—	No	1—	

UNITED STATES—*cont.*

University of California (Berkeley):				
Publications in Pathology	1903—	Vol.	1—	
Publications in Zoology	1908—	Vol.	6—	
University of Kansas:				
Science Bulletin (*Lawrence*)	1902—	Vol.	1—	
Venereal Disease Information (Washington)	1923—	Vol.	4—	
Veterinary Medicine (Chicago)	1913—	Vol.	8—	
Zoopathologica (*New York*)	1926—	Vol.	1—	

ASIA.

CHINA.

[*Bulletin Médical Franco-Chinois* (*Peking*)	1920	Vol.	1]	
China Medical Journal (Shanghai)	1912—	Vol.	26—	
Contributions from the Peking Union Medical College (*Peking*)	1921—	Vol.	1—	
National Medical Journal of China (Shanghai)	1919—	Vol.	5—	

EAST INDIAN ARCHIPELAGO.

Geneeskundig Tijdschrift voor Nederlandsch-Indië (Rijswijk-Batavia)	1901—	Vol.	41—	[Incomplete]
Journal of the Philippine Islands Medical Association (Manila)	1921—	Vol.	1—	
Mededeelingen van der Volksgezondheid Dienst in Nederlandsch-Indie [formerly "*van den Burgerlijken Geneeskundigen Dienst*"] (*Batavia*)	1912—	Vol.	1—	
Mededeelingen uit het Geneeskundig Laboratorium te Weltevreden (Batavia)	1919—	3 Ser. A.		No. 1
Nederlandsch-Indische Bladen voor Diergeneeskunde en Dierenteelt (Batavia)	1919—	Vol	31—	
Philippine Agricultural Review (Manila)	1916—	Vol.	9—	
Philippine Journal of Science [formerly *Philippine Journal of Science Section B. Philippine Journal of Tropical Medicine*] (*Manila*)	1906—	Vol.	1—	

INDIA AND CEYLON.

Agricultural Research Institute, Pusa, Bulletins. (Calcutta)	1912—			[Incomplete]
Arquivos Indo-Portugueses de Medicina e Historia Natural (*Nova Goa*)	1921	Vol	1—	
Boletim Geral de Medicina e Farmacia (Nova Goa)	1919—	5 Ser		No 1—
Ceylon Journal of Science, Sect. D., Med. Sci. (*Colombo*)	1924—	Vol.	1—	
[Indian & Eastern Engineer (Calcutta)	1915–21	Vols.	36–49]	
[Indian Engineering (Calcutta)	1915–24	Vols	57–75	No 6]
Indian Journal of Medical Research (*Calcutta*)	1913—	Vol	1—	
Indian Medical Gazette (Calcutta)	1889–1908	[Vols	24 & 34–43	Incomplete
	1909—	Vol.	44—	
Journal of the Association of Medical Women in India (Delhi)	1923—	Vol.	11—	
Memoirs of the Department of Agriculture in India (Calcutta):				
Bacteriological Series	1912—	Vol.	1—	
Veterinary Series	1913—	Vol.	1—	
Report of the Agricultural Research Institute and College, Pusa. (Calcutta)	1907—			[Incomplete]

INDO-CHINA, AND FURTHER INDIA.

Annual Reports of the Institute for Medical Research, Kuala Lumpur, Federated Malay States (Kuala Lumpur)	1912—			
Archives des Instituts Pasteur d'Indochine (*Saigon*)	1925—	Vol.	1—	
Bulletins from the Institute for Medical Research, Federated Malay States	1924—			No. 1—
[Bulletin de la Société Médico-Chirurgicale de l'Indochine (Hanoi & Haiphong)	1910–22	Vol.	1–12	[Incomplete]

INDO-CHINA, AND FURTHER INDIA—*cont.*

[Medical Journal of the Siamese Red Cross	1918–20	Vol.	1–3]	
Monthly Bulletin of the Eastern Bureau, League of Nations Health Organisation (*Singapore*)	1925—	Vol.	1—	
Malayan Medical Journal (*Singapore*)	1926—	Vol.	1—	
Studies from Institute for Medical Research, Federated Malay States (Singapore)	1901—	Vol.	1—[Incomplete]	
Transactions of the Malaya Branch of the British Medical Association (Singapore)	1923—	No.	9—	
Weekly Fasciculus. Epidemiological Intelligence received by the Eastern Bureau, League of Nations Health Organisation (*Singapore*)	1925—	Vol.	1—	

JAPAN.

Acta Scholae Medicinalis Universitatis Imperialis in Kioto (*Kioto*)	1916—	Vol.	1—	
Aichi Journal of Experimental Medicine (*Nagoya*)	1923—	Vol.	1—	No. 1—
Japanese Journal of Medical Sciences. Abstracts (*Tokyo*)	1922—	Vol.	1—	
Japan Medical World (Tokyo)	1921—	Vol.	1—	
Japanese Journal of Dermatology and Urology [formerly Japanische Zeitschrift fur Dermatologie u. Urologie] (Tokyo)	1917—	Vol.	17	No. 7—
[Jikwa Zasshi	1917–22]			
Journal of the College of Agriculture, Imperial University of Tokyo (Tokyo)	1916—	Vol.	3—	
Journal of the Japanese Society of Veterinary Science (*Tokyo*)	1922—	Vol.	1—	
Journal of Oriental Medicine (Dairen)	1923—	Vol.	1—	No. 2—
Journal of the Public Health Association of Japan (Tokio)	1926—	Vol.	2—	
Kitasato Archives of Experimental Medicine (*Tokyo*)	1917—	Vol.	1—	
[Kyoto Igaku Zassi (Kyoto)	1917–21	Vols.	14–18]	
Mitteilungen aus der medizinischen Fakultät der Kaiserlichen Kyushu-Universität (Fukuoka)	1917—	Vol.	3—	
Mitteilungen aus der medizinischen Fakultät der Kaiserlichen Universität zu Tokyo (Tokio)	1911—	Vol.	10—	
Mitteilungen ueber allgemeine Pathologie und pathologische Anatomie [formerly *Mitteilungen aus dem pathologischen Institut der Kaiserlichen Universität zu Sendai, Japan*]	1919—	Vol.	1—	
[Mitteilungen der Medizinischen Gesellschaft zu Tokio (Tokio)	1917–20	Vols.	31–34]	
Oriental Journal of Diseases of Infants (*Kyoto*)	1926—	Vol.	1—	
Saikingaku Zasshi	1917–23			
Sei-i-Kwai Medical Journal (Tokio)	1913—	Vol.	32—	
Taiwan Igakkai Zasshi	1917—			
Tokyoer Medizinische Wochenschrift (Tokyo)	1917—	No.	2046—	
Verhandlungen der Japanischen Pathologischen Gesellschaft (*Tokyo*)	1911—	Vol.	1—	

AFRICA.

Archives de l'Institut Pasteur d'Algerie (*Algiers*)	1923—	Vol.	1—
Archives de l'Institut Pasteur de Tunis (*Tunis*)	1906—	Vol.	1—
Archivo Italiano di Science Mediche Coloniali (*Tripoli*)	1920—	Vol.	1—
Bulletin Médical du Katanga (*Elisabethville*)	1924—	No.	1—
Bulletin de la Société Ophthalmologie d'Egypte	1912—		
Farming in South Africa (*Pretoria*)	1926—	Vol.	1—
[Journal of the Department of Agriculture, Union of South Africa (Pretoria)	1921–26	Vols.	1–12]
Journal of the Medical Association of South Africa (*British Medical Association*) (*Cape Town*)	1927—	Vol.	1—
Kenya Medical Journal (*Nairobi*)	1924—	Vol.	1—
Magallah Tibbiah El Masriah (Cairo)	1923—		
[Medical Journal of South Africa [formerly Transvaal Medical Journal] (Johannesburg)	1912–26	Vols.	8–22]
[*Nyasaland Sleeping Sickness Diary* (*Zomba*)	1908–15	Nos.	1–25]

AFRICA—*cont.*

Proceedings of the Transvaal Mine Medical Officers' Association (*Johannesburg*)	1921—	Vol.	1—	
Revista Médica de Angola (*Loanda*)	1921—	Vol.	1—	
Rhodesia Agricultural Journal (Salisbury)	1915—	Vol.	12—	
South African Institute for Medical Research—Publications	1913–26	Vols.	1-24	
[South African Medical Record (Cape Town)	1910—	Vol.	8—]	

AUSTRALASIA.

AUSTRALIA.

Australian Institute of Tropical Medicine Collected Papers (*Townsville*)	1914—	No.	1—	
Commonwealth of Australia: Quarantine Service Publications (*Melbourne*)	1920–23	No	1-19	
Commonwealth of Australia: Department of Health. Service Publications (*Melbourne*)	1922—	No	20—	
Industrial Hygiene	1924—	No.		
Tropical Division	1923—	No.		
Veterinary Hygiene	1924—	No.		
Health (*Melbourne*)	1923—	Vol.		
[*Health Forum* (*Sydney*)	1923—	Vol.	1—	Nos 1-4]
Journal of the Australian Veterinary Association (*Sydney*)	1925—	Vol		
Medical Journal of Australia (*Sydney*)	1914—	Vol		
Queensland Agricultural Journal	1919—	Vol	12—	
Records of the South Australian Museum	1918—	Vol.	1—	

NEW ZEALAND.

New Zealand Medical Journal (Wellington)	1913—	Vol	12 –	No 45—

The Bureau possesses complete sets of the following JOURNALS WHICH HAVE CEASED PUBLICATION.—

American Journal of Tropical Diseases and Preventive Medicine (*New Orleans*)	1913–16	Vols	1-3
American Society of Tropical Medicine—Transactions (*New Orleans*)	1904–14	Vols	1-9
Archives des Instituts Pasteur de l'Afrique du Nord (*Algiers & Tunis*)	1921–22	Vols	1-2
Bulletin Sanitaire de Constantinople [formerly *Bulletin de l'Administration Sanitaire des frontières*] (*Constantinople*)	1921–23	Nos	1-20
Bulletin de la Société Médico-Chirurgicale française de l'Ouest-Africain (*Dakar*)	1919–21	Vols.	1-3
Ectoparasites (*London*)	1921	Vol.	1
Folia Microbiologica (*Delft*)	1912–19	Vols	1-4
International Journal of Public Health (*Geneva*)	1920–21	Vols	1-2
Journal of the London School of Tropical Medicine (*London*)	1911–13	Vols.	1-2
Journal of Tropical Veterinary Science (*Calcutta*)	1906–12	Vols.	1-7
Kala Azar Bulletin (*London*)	1911–12	Nos	1-3
Medical Science. Abstracts and Reviews (*London*)	1919–25	Vols	1-12
Paludism (*Simla*)	1910–12	Nos.	1-5
Proceedings of the Medical Association of the Isthmian Canal Zone [formerly *Proceedings of the Canal Zone Medical Association*] (*Mount Hope, C.Z.*)	1908–23	Vols.	1-13
Reports of the Sleeping Sickness Commission of the Royal Society (*London*)	1903—	No.	1—
Scientific Memoirs by Officers of the Medical & Sanitary Department of the Government of India (*Calcutta*)	1902–12	(New Ser.) Nos.	1-60
Sleeping Sickness Bulletin (*London*)	1908–12	Vols.	1-4
Yellow Fever Bureau Bulletin (*Liverpool*)	1911–15	Vols.	1-3

NOTE.—The Director would consider proposals for the exchange of the Bureau publications with other medical and scientific journals in which original papers on hygiene, tropical diseases or parasitology are published.

The following serial publications not received by the Bureau are taken by the London School of Hygiene and Tropical Medicine and are available for reference in the joint library of the School and the Bureau (TROPICAL DISEASES LIBRARY) :—

Annales de Médecine (Paris)	1920—	Vol. 7—	
Archiv für Protistenkunde (Jena)	1925—	Vol. 53—	
Australian Journal of Experimental Biology and Medical Science (Adelaide)	1924—	Vol. 1—	
Biochemical Journal (London)	1923—	Vol. 17—	
Boletin de la Oficina Sanitaria Panamericana (Washington)	1922—	Vol. 1—	
British Journal of Dental Science (London)	1922—	Vol. 65—	
British Journal of Venereal Diseases (London)	1925—	Vol. 1—	
Bulletin de l'Académie de Médecine (Paris)	1922—	Vol. 87—	
Bulletin du Comité d'Etudes Historiques et Scientifiques de l'Afrique Occidentale Française (Gorée)	1924—	Vol. 7—	
Bulletin of the New York Academy of Medicine (New York)	1925—	2nd Ser.	Vol 1—
Clifton Medical Bulletin (Clifton Springs, N Y)	1922—	Vol. 8—	
Comptes Rendus de l'Académie des Sciences (Paris)	1910—	Vol. 150—	
Днепропетровский (ь. Екатеринославский) Медицинский Журнал (Dniepropetrovsk)	1926—	Vol 5—	
Index Medicus (Washington)	1921—	3rd Ser.	Vol. 1—
Indian Medical Record (Calcutta)	1919—	Vol. 39—	
Journal de physiologie et de pathologie générale (Paris)	1919—	Vol. 18—	
Magyar Orvosi Archivum (Budapest)	1925—	Vol. 26—	
Medical Annual (Bristol)	1921—	Vol 39—	
Mitteilungen aus dem Zoologischen Museum in Berlin	1910—	Vol. 5—	
Orvosi Hetilap (Budapest)	1923—	Vol. 67—	
Quarterly Cumulative Index to Current Medical Literature (Chicago)	1916—	Vol. 1—	
Records of the Indian Museum (Calcutta)	1916—	Vol 12—	
Sanidad y Beneficencia (Habana)	1910—	Vol 3—	
Transactions of the South Indian Branch of the British Medical Association (Madras)	1899—	Vol 8—	
Tropical Agriculture (Trinidad)	1924—	Vol. 1—	
Zoological Record (London)	1920—	Vol. 57—	
